

STRUCTURAL STEEL POST FOR GROUND MOUNTED SIGNS											
POST DES. NO.*	NOM SIZE (IN.)(LBS/FT)	TORQUE AND HIGH STRENGTH BOLTS	BASE CONNECTION DATA TABLE (IN.)								
			A	B	C	D	E	F	G	W	R
1	W6x9	5/8" ROUND x 2 3/4" 345 IN./LBS.	5	2	1 1/4	2 3/4	1 1/8	3/4	1/2	1/4	1 1/32
2	W6x15										
3	W8x18										
4	W10x22	3/4" ROUND x 3 1/2" 555 IN./LBS.	6	2 1/4	1 3/8	3 1/2	1 1/4	1	3/4	5/16	1 3/32
5	W10x26										
6	W12x26										

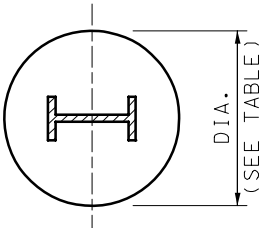
POST AND FOOTING DATA TABLE													
POST					FOOTING								
POST DES. NO. ✱	NOM. SIZE	WEIGHT		STUB LENGTH	DIA.	LEVEL GROUND		6:1 GRADE		4:1 GRADE		3:1 OR 2:1 GRADE	
		LBS/FT	LBS/IN			DEPTH	C.Y.	DEPTH	C.Y.	DEPTH	C.Y.	DEPTH	C.Y.
1	W6	9.0	0.75	3'-0"	15"	3'-0"	0.14	3'-2"	0.15	3'-3"	0.16	3'-6"	0.17
2	W6	15.0	1.25	4'-0"	24"	4'-0"	0.47	4'-2"	0.50	4'-3"	0.51	4'-6"	0.54
3	W8	18.0	1.50	4'-6"	28"	4'-6"	0.71	4'-8"	0.73	4'-9"	0.74	5'-0"	0.78
4	W10	22.0	1.83	5'-0"	36"	5'-0"	1.31	5'-2"	1.36	5'-3"	1.39	5'-6"	1.45
5	W10	26.0	2.17	5'-0"	36"	5'-0"	1.31	5'-3"	1.37	5'-5"	1.43	5'-9"	1.52
6	W12	26.0	2.17	5'-6"	36"	5'-6"	1.44	5'-9"	1.52	5'-11"	1.56	6'-3"	1.65

SHEET METAL BOLT RETAINER CUT FROM 30 GAGE GALVANIZED SHEET METAL. PLACE BETWEEN BASE PLATES. SIZE VARIES TO FIT PLATE. BOLT HOLES TO BE 1/16" LARGER THAN REQUIRED BOLT SIZE.

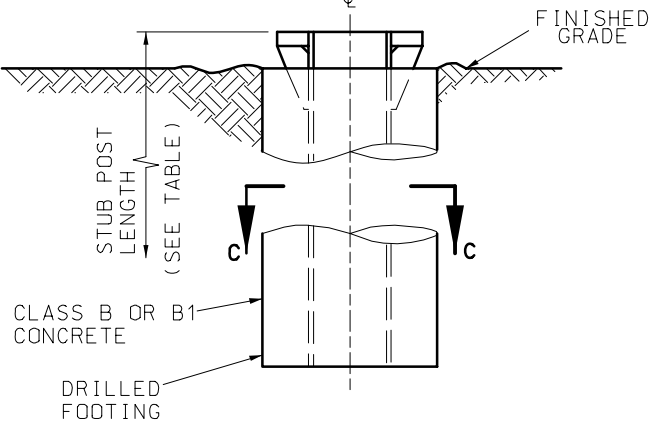


BOLT RETAINER

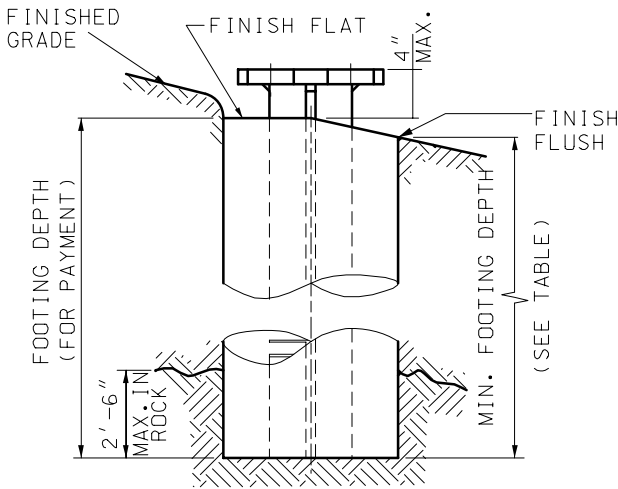
* FOR POST DESIGNS NUMBERS 3, 4, 5 AND 6 HAVING WEIGHTS GREATER THAN 18LBS./FT.. POSTS SHALL BE SPACED AT LEAST 7' APART. FOR POST DESIGNS NUMBERS 1 AND 2, POSTS MAY BE SPACED LESS THAN 7' APART. DO NOT USE THREE NUMBER 1 OR 2 POSTS WITH A SIGN WIDTH OF LESS THAN 10'-6".



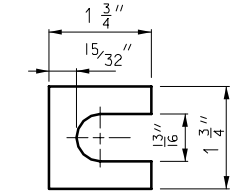
SECTION C-C



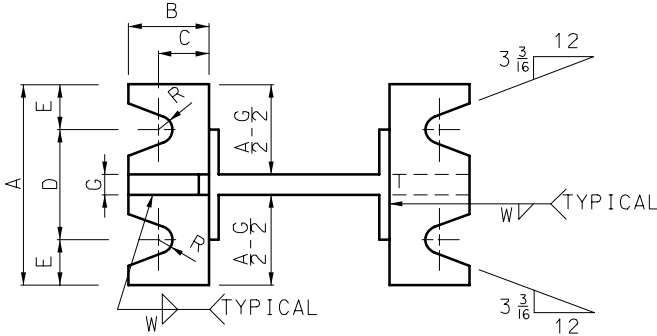
STUB DETAIL



FOOTING DETAIL

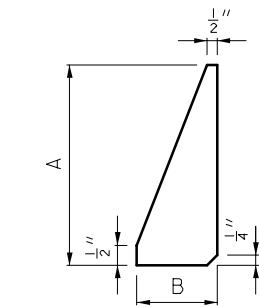


SHIM

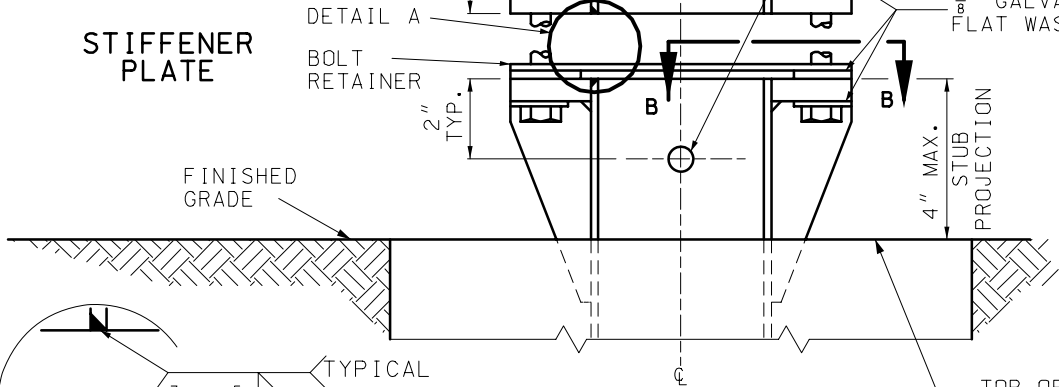


SECTION A-A

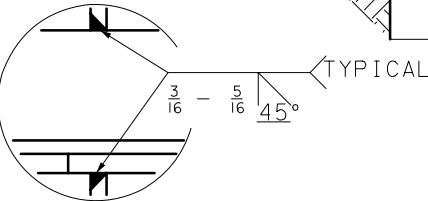
SECTION B-B
POST AND FOOTING



STIFFENER PLATE



ELEVATION



DETAIL A

GENERAL NOTES:

DESIGN SPECS: AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS. LUMINAIRES AND TRAFFIC SIGNALS - 1985.

POSTS TO BE GALVANIZED AFTER FABRICATION.

METAL PROJECTING BEYOND THE PLANE OF THE PLATE FACE WILL NOT BE ALLOWED.

REMOVE ALL GALVANIZING RUNS OR BEADS IN THE WASHER AREA.

ALL STRUCTURAL STEEL STIFFENER PLATES AND BASE PLATES, FOR GROUND MOUNTED SIGNS SHALL MEET THE REQUIREMENTS OF ASTM A 36 OR AASHTO M 223 GRADE 50, OR AASHTO 222, MINIMUM YIELD 50,000 PSI.

IN THE EVENT THE DISTANCE BETWEEN THE TOP OF THE FOOTING AND THE BOTTOM OF THE SIGN IS LESS THAN 7'-9", THE SIGN HEIGHT AND POST LENGTH IS TO BE INCREASED SUFFICIENTLY TO ACCOMMODATE THIS MINIMUM SPACING.

HINGE PLATES NOT REQUIRED ON SINGLE POST SIGNS OR ANY SIGNS USING PIPE POSTS.

NUTS ON HINGE PLATE BOLTS SHALL BE TIGHTENED TO THE REQUIRED MINIMUM BOLT TENSION VALUES SHOWN IN TABLE 1 SEC. 1080 OF THE STANDARD SPECIFICATIONS.

THE NUT SHALL BE FREE RUNNING. IF THE NUT WILL NOT SPIN ON THE BOLT BECAUSE OF GALVANIZING IRREGULARITIES, A LUBRICANT SHALL BE APPLIED.

ALL BREAKAWAY ASSEMBLY BOLTS SHALL BE TIGHTENED IN A SYSTEMATIC MANNER TO THE PRESCRIBED TORQUE SHOWN ON THIS DRAWING.

EACH BREAKAWAY ASSEMBLY BOLT SHALL BE LOOSENED AND RE-TIGHTENED TO THE REQUIRED TORQUE IN THE SAME ORDER AS THE INITIAL TIGHTENING.

THE THREADS SHALL BE BURRED AT THE NUT USING A CENTER PUNCH TO PREVENT NUT FROM LOOSENING.

POST LENGTH QUANTITY SHOWN ON PLANS INCLUDES STUB.

1" X 2-1/2" HIGH STRENGTH BOLTS FOR PIPE POSTS SHALL BE OF THE DESIGNATION AASHTO M 164 OR ASTM A 449. ALL OTHER H.S. BOLTS SHALL BE OF THE DESIGNATION AASHTO M 164.

FURNISH TWO .012"± AND TWO .0032"± THICK SHIMS PER POST FROM BRASS SHIM STOCK OR STRIP, DESIGNATION ASTM B 36. SHIM AS REQUIRED TO PLUMB POST.

HIGH STRENGTH BOLTS WITH HEX NUT AND THREE WASHERS WITH EACH BOLT ARE TO BE GALVANIZED.

OPTIONAL HOLES (13/16" ROUND FOR "I" SHAPE POSTS AND 3/16" ROUND FOR PIPE POST BASE PLATES) AS SHOWN IN "ELEVATIONS" ARE TO BE USED AS AID FOR GALVANIZING ONLY.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION			
SIGN MOUNTING DETAILS BREAKAWAY ASSEMBLIES FOR GROUND MOUNTED SIGNS			
DATE: _____	EFFECTIVE: 06-01-2006	903.03BC	1/11

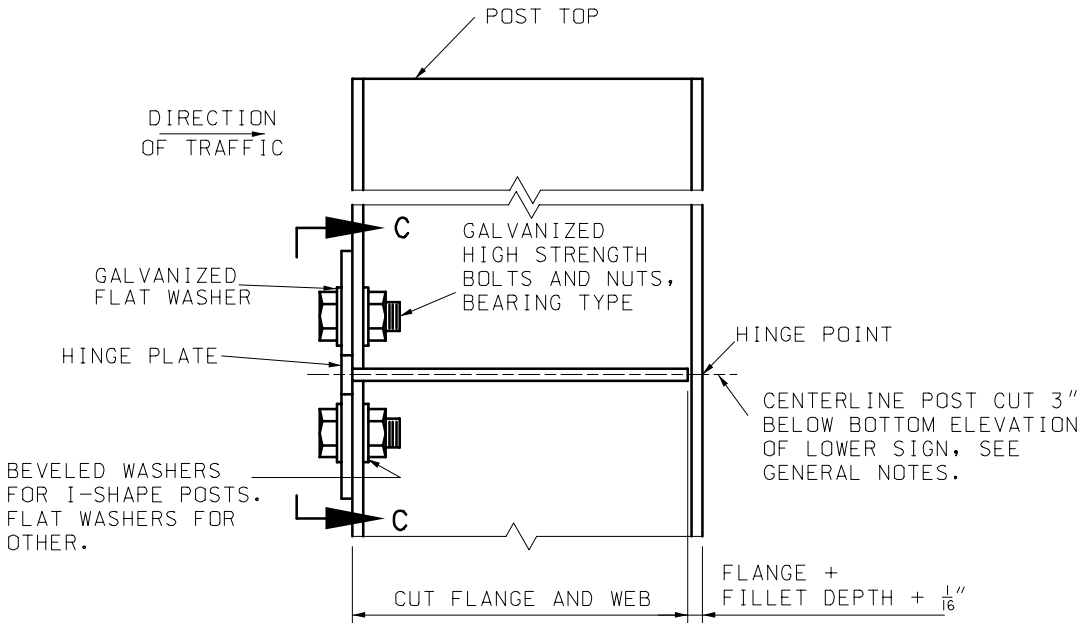
WIDE FLANGE STRUCTURAL STEEL POSTS DESIGN DATA

POST DES. NO.	NOM. SIZE (IN.)	WEIGHT		DEPTH (IN.)	FLANGE		WEB THICK (IN.)
		LB/FT	LB/IN		WIDTH (IN.)	THICK (IN.)	
1	W6	9	0.75	5 ⁷ / ₈	4	³ / ₁₆	³ / ₁₆
2	W6	15	1.25	6	6	¹ / ₄	¹ / ₄
3	W8	18	1.50	8 ¹ / ₈	5 ¹ / ₄	⁵ / ₁₆	¹ / ₄
4	W10	22	1.83	10 ¹ / ₈	5 ³ / ₄	³ / ₈	¹ / ₄
5	W10	26	2.17	10 ³ / ₈	5 ³ / ₄	⁷ / ₁₆	¹ / ₄
6	W12	26	2.17	12 ¹ / ₄	6 ¹ / ₂	³ / ₈	¹ / ₄

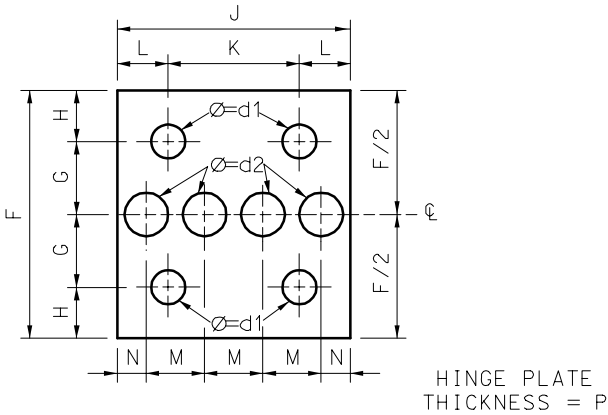
THE WEIGHT OF STRUCTURAL STEEL POSTS SHOWN IN THE CONTRACT HAS BEEN COMPUTED USING THE WEIGHTS SHOWN.

HINGE PLATE DATA TABLE

POST DESIGN NO.	F (IN.)	G (IN.)	H (IN.)	J (IN.)	K (IN.)	L (IN.)	M (IN.)	N (IN.)	d1 (IN.)	d2 (IN.)	P (IN.)	BOLT DIA. (IN.)	WT. (EA.) (LBS.)
1	4 ¹ / ₄	1	1 ¹ / ₈	4	2 ¹ / ₄	⁷ / ₈	1	¹ / ₂	⁹ / ₁₆	³ / ₄	³ / ₁₆	¹ / ₂	0.76
2	5	1 ¹ / ₄	1 ¹ / ₄	6	3 ¹ / ₂	1 ¹ / ₄	1 ¹ / ₂	³ / ₄	¹¹ / ₁₆	1 ¹ / ₄	¹ / ₄	⁵ / ₈	1.67
3	5	1 ¹ / ₄	1 ¹ / ₄	5 ¹ / ₄	2 ³ / ₄	1 ¹ / ₄	1 ¹ / ₄	³ / ₄	¹¹ / ₁₆	1 ¹ / ₁₆	¹ / ₄	⁵ / ₈	1.51
4	6	1 ¹ / ₂	1 ¹ / ₂	5 ³ / ₄	2 ³ / ₄	1 ¹ / ₂	1 ³ / ₈	¹³ / ₁₆	¹³ / ₁₆	1 ¹ / ₈	⁵ / ₁₆	³ / ₄	2.52
5	6	1 ¹ / ₂	1 ¹ / ₂	5 ³ / ₄	2 ³ / ₄	1 ¹ / ₂	1 ³ / ₈	¹³ / ₁₆	¹³ / ₁₆	1 ¹ / ₈	⁵ / ₁₆	³ / ₄	2.52
6	6	1 ¹ / ₂	1 ¹ / ₂	6 ¹ / ₂	3 ¹ / ₂	1 ¹ / ₂	1 ⁵ / ₈	¹³ / ₁₆	¹³ / ₁₆	1 ⁵ / ₁₆	⁵ / ₁₆	³ / ₄	2.79



ELEVATION
HINGE PLATE DETAIL



ALL HOLES SHALL BE DRILLED. ALL PLATE CUTS SHALL PREFERABLY BE SAW CUTS. HOWEVER: FLAME CUTTING WILL BE PERMITTED PROVIDED ALL EDGES ARE GROUND.

HINGE PLATE SHALL BE FABRICATED FROM ASTM A 36 STRUCTURAL STEEL.

ELEVATION C-C

MISSOURI HIGHWAYS AND TRANSPORTATION
COMMISSION

SIGN MOUNTING DETAILS
BREAKAWAY ASSEMBLIES FOR
GROUND MOUNTED SIGNS

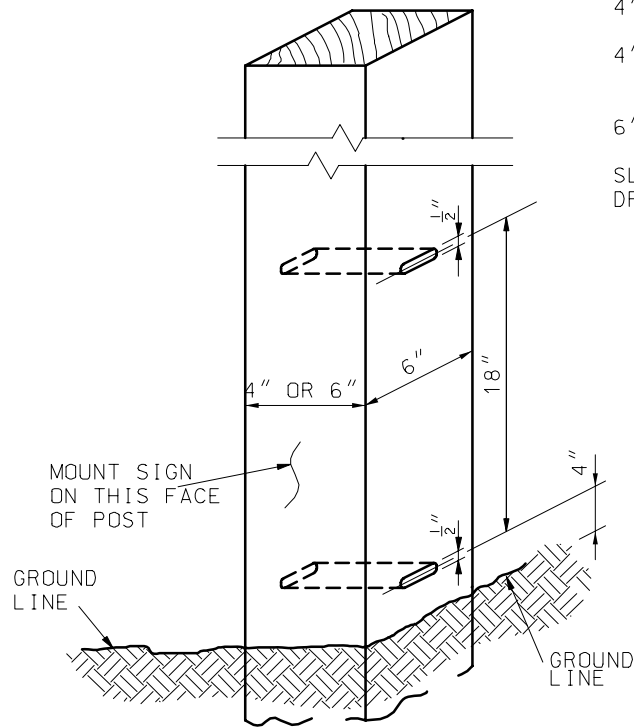
DATE: _____

EFFECTIVE: 06-01-2006

903.03BC

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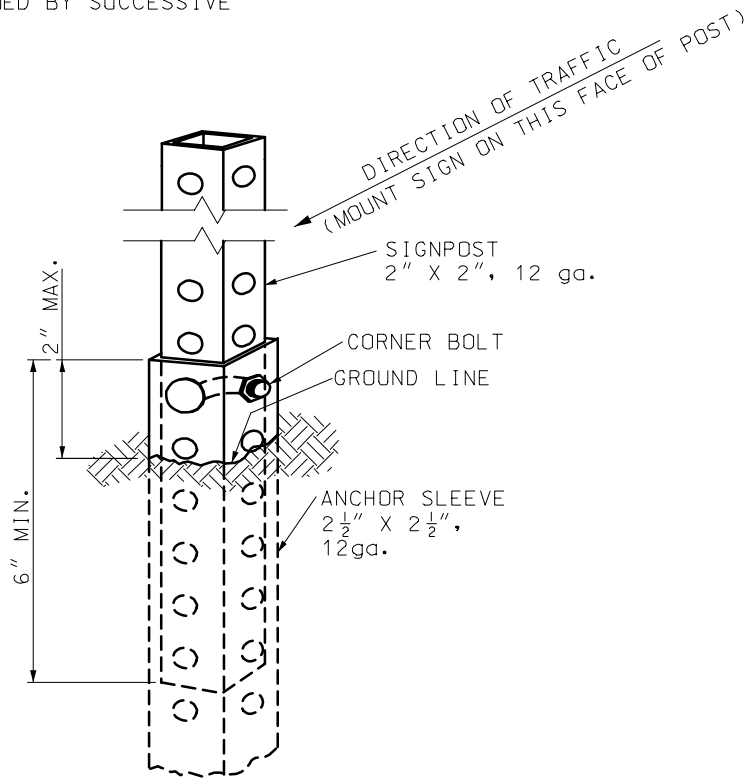
WOOD POST DETAIL

4" X 4" WOOD POST - NO SLOTS OR HOLES REQUIRED

4" X 6" WOOD POST - 1 1/2" X 1/2" SLOT ON 6" SIDE OR 1 1/2" DIA. HOLE ON 6" SIDE

6" X 6" WOOD POST - 2" X 1/2" SLOT OR 2" DIA. HOLE

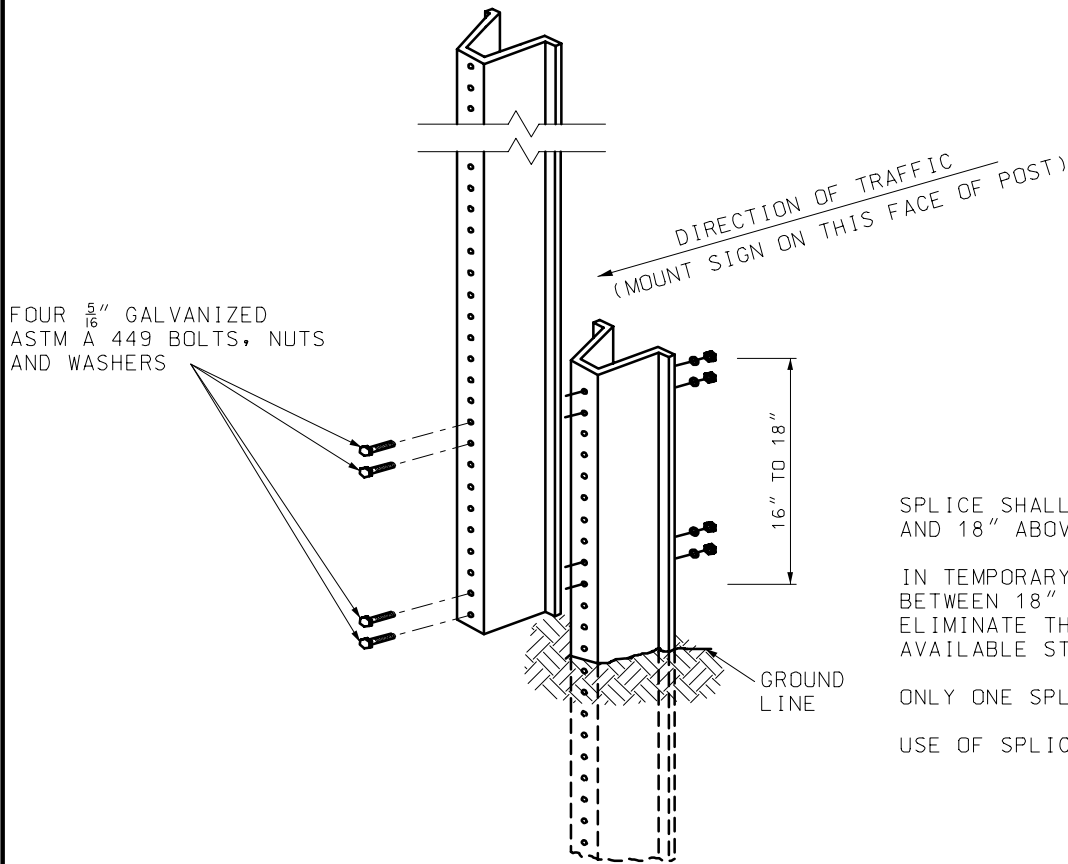
SLOT ACROSS NEUTRAL AXIS FORMED BY SUCCESSIVE DRILLING WITH 1/2" BIT.



THE SIGNPOST IS ATTACHED TO THE ANCHOR SLEEVE WITH THE CORNER BOLT PER MANUFACTURER'S SPECIFICATION.

IN TEMPORARY INSTALLATIONS, A SPLICE MAY BE POSITIONED ENTIRELY BETWEEN 18" AND 60" ABOVE GROUND LINE TO ACCOMMODATE READILY AVAILABLE STOCK. THE SPLICE SHALL CONSIST OF A 12 INCH PIECE OF 1 3/4 INCH TUBE, INSERTED 6" INTO BOTH THE UPPER AND LOWER SIGNPOST SECTIONS AND CORNER-BOLTED AT BOTH ENDS.

PERFORATED SQUARE STEEL TUBE POST DETAIL



U-CHANNEL POST DETAIL

SPLICE SHALL BE POSITION ENTIRELY BETWEEN GROUND LINE AND 18" ABOVE GROUND LINE.

IN TEMPORARY INSTALLATIONS, THE SPLICE MAY BE POSITIONED BETWEEN 18" AND 60" ABOVE GROUND LINE. PLACED TO ENTIRELY ELIMINATE THE NEED FOR AN ADDITIONAL SPLICE WHEN READILY AVAILABLE STOCK IS USED.

ONLY ONE SPLICE WILL BE ALLOWED PER POST.

USE OF SPLICE IS OPTIONAL.

SIGN AREA (SQ.FT.)	POST TYPE		
	U-CHANNEL	WOOD	PERFORATED SQUARE STEEL TUBING
≤ 10	1 - 3.0 LB./FT.*	1 - 4" X 4"*	1 - 2" 12 GA.*
> 10 ≤ 16	2 - 3.0 LB./FT.	2 - 4" X 4"* 1 - 4" X 6"*	2 - 2" 12 GA.
> 16 ≤ 24	2 - 3.0 LB./FT.	2 - 4" X 6"	3 - 2" 12 GA.**
> 24 ≤ 30	3 - 3.0 LB./FT.	2 - 4" X 6"	N/A
> 30 ≤ 50	N/A	2 - 6" X 6"	N/A

* SIGNS GREATER THAN 4 FEET IN WIDTH, EXCEPT DIAMOND SHAPE SIGNS, REQUIRE TWO POSTS.

** REQUIRES SLIP BASE PER MANUFACTURER'S RECOMMENDATION.

POST SIZE REQUIREMENTS

GENERAL NOTES:

ALL POSTS SHALL BE EMBEDDED A MINIMUM OF 3 FEET.

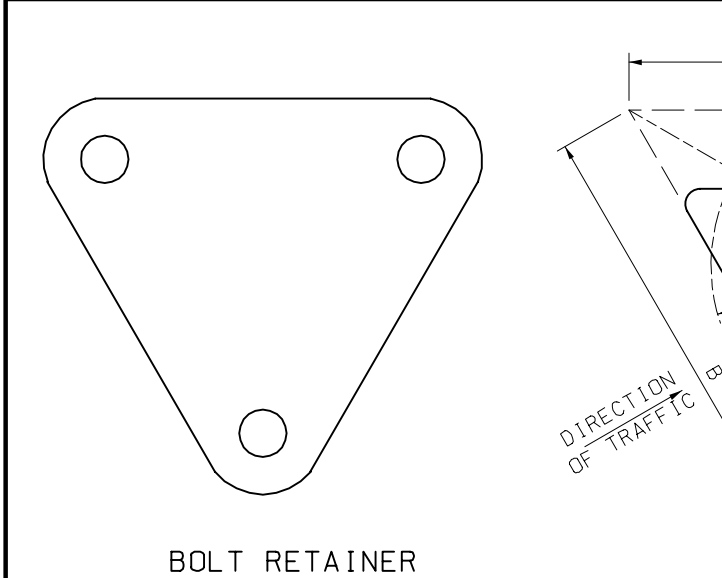
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION			
		HIGHWAY SIGNING POST MOUNTING DETAILS	
DATE: _____	EFFECTIVE: 06-01-2006	903.03BC	3 / 11

ROUND PIPE POST FOR GROUND MOUNTED SIGNS

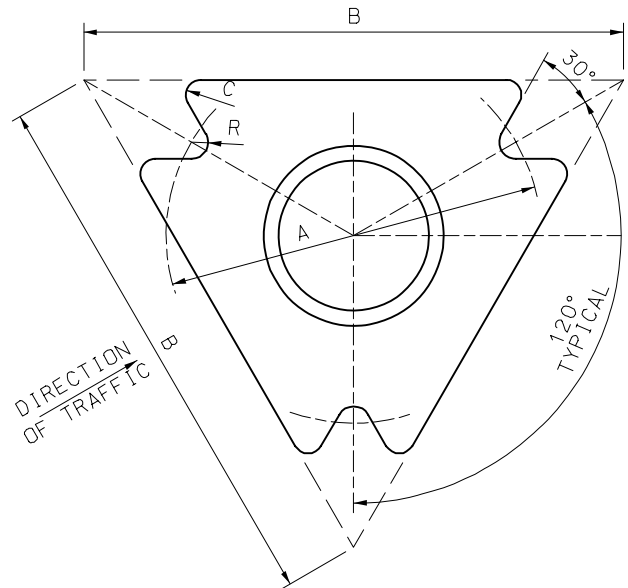
NOMINAL PIPE SIZE (IN.)	BOLT DATA			BASE CONNECTION DATA TABLE (IN.)						
	SIZE (IN.)	LENGTH (IN.)	TORQUE IN.-LB	A	B	C	R	T	W	
2 1/2 & 3	1/2	3 1/2	140	6 1/4	9	1/4	9/32	1	1/4	
4	5/8	3 3/4	345	7 3/16	10	1/4	3/8	1	5/16	

ROUND PIPE POST AND FOOTING DATA TABLE

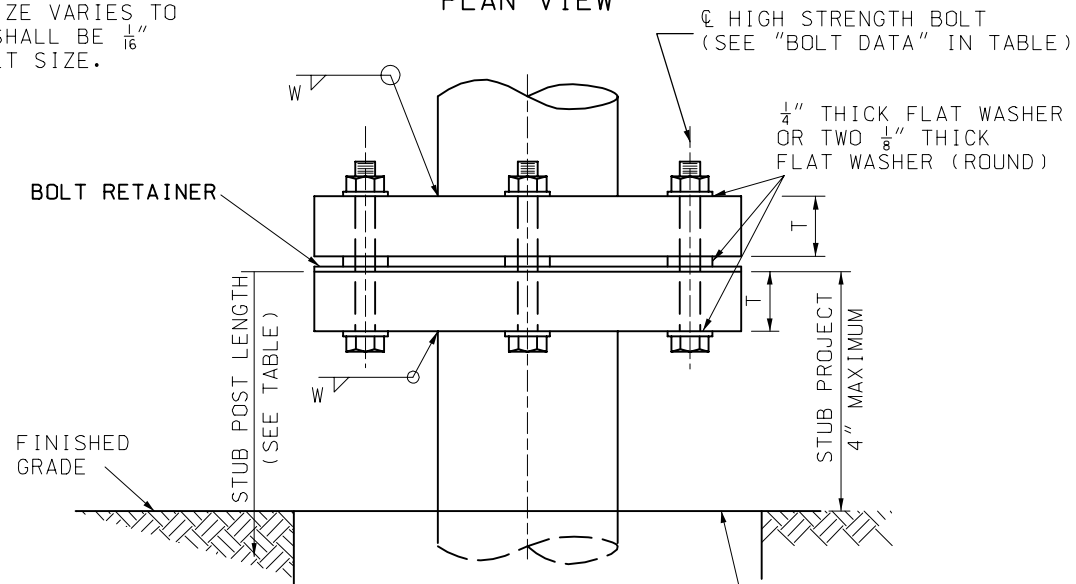
NOM. SIZE (IN.)	WEIGHT		STUB LENGTH	FOOTING		CONCRETE C.Y.
	LBS/FT	LBS/IN		DIA.	DEPTH	
2 1/2	5.79	0.48	4' - 3 1/2"	12"	4'-6"	0.13
3	7.58	0.63	4' - 3 1/2"	12"	4'-6"	0.13
4	10.79	0.90	5' - 3 1/2"	18"	5'-6"	0.36



SHEET METAL BOLT RETAINER CUT FROM 30 GAUGE GALVANIZED SHEET METAL. PLACE BETWEEN BASE PLATES. SIZE VARIES TO FIT PLATE. BOLT HOLES SHALL BE 1/16" LARGER THAN REQUIRED BOLT SIZE.

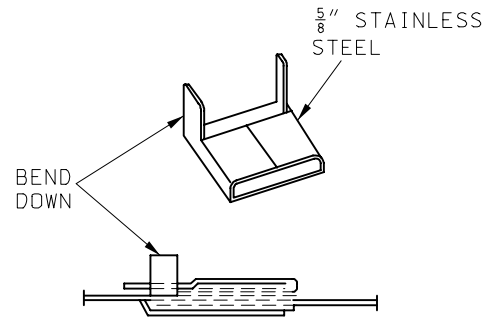


PLAN VIEW



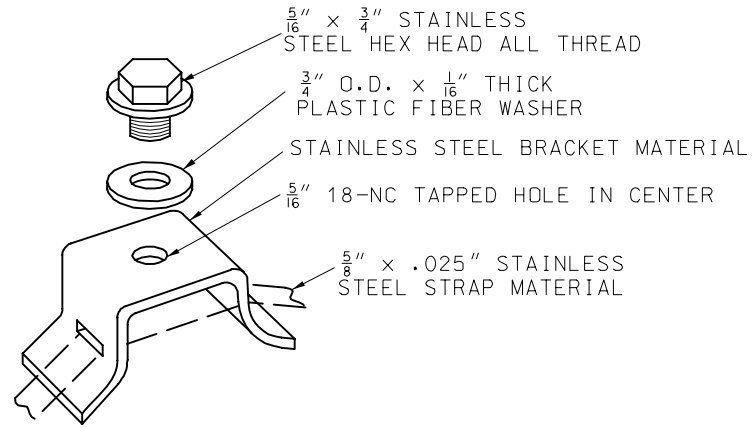
ELEVATION
(STEEL PIPE POST BASE CONNECTION)
MULTI-DIRECTION SLIP BASE

* PIPE 3" DIA. AND UNDER:
2' MAXIMUM IN ROCK,
PIPE OVER 3" DIA.:
3' MAXIMUM IN ROCK

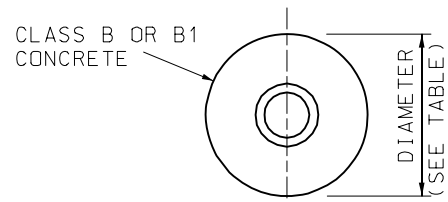


VIEW SHOWING ENDS OF STRAP, CLAMPED IN SEAL

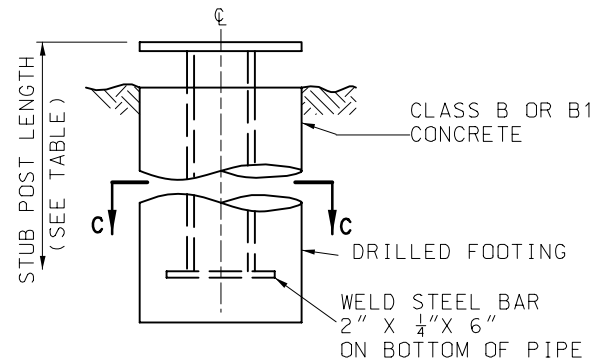
STRAP SEAL



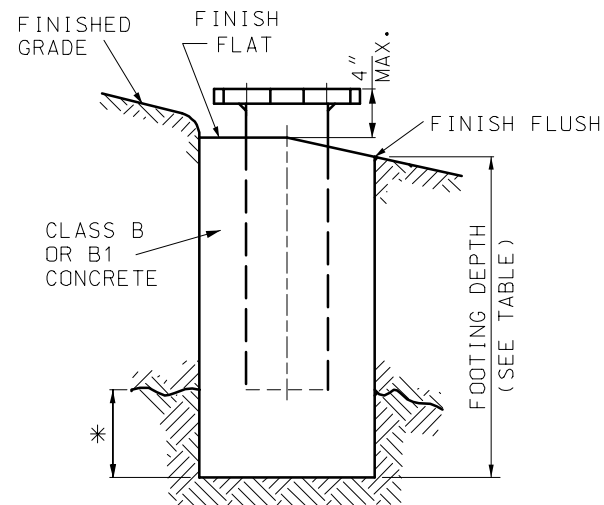
FLARED LEG SIGN BRACKET



SECTION C-C

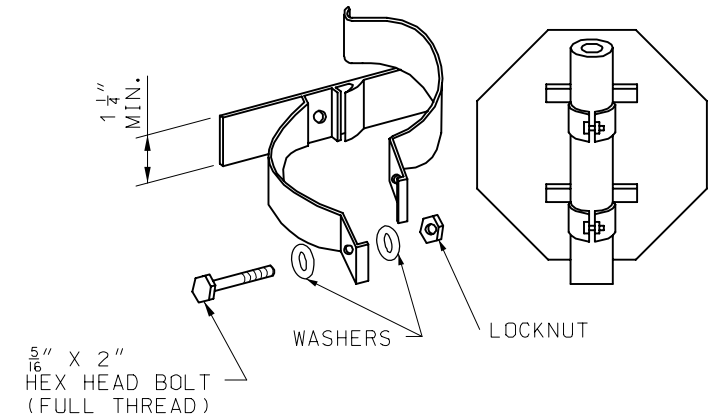


FOUNDATION DETAIL
SLIP BASE ASSEMBLY



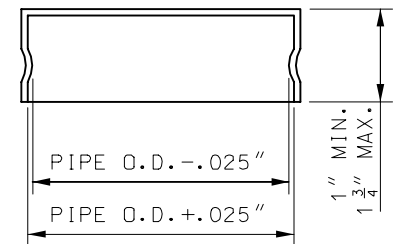
FOOTING DETAIL

ASTM B 308, 6061-T6 OR 6063-T6,
ALUMINUM ALLOY EXTRUSIONS



STAINLESS STEEL HARDWARE
CLAMP TYPE SIGN SUPPORTS
FOR PIPE POST

ROLLED CRIMP TO ENGAGE PIPE O.D.

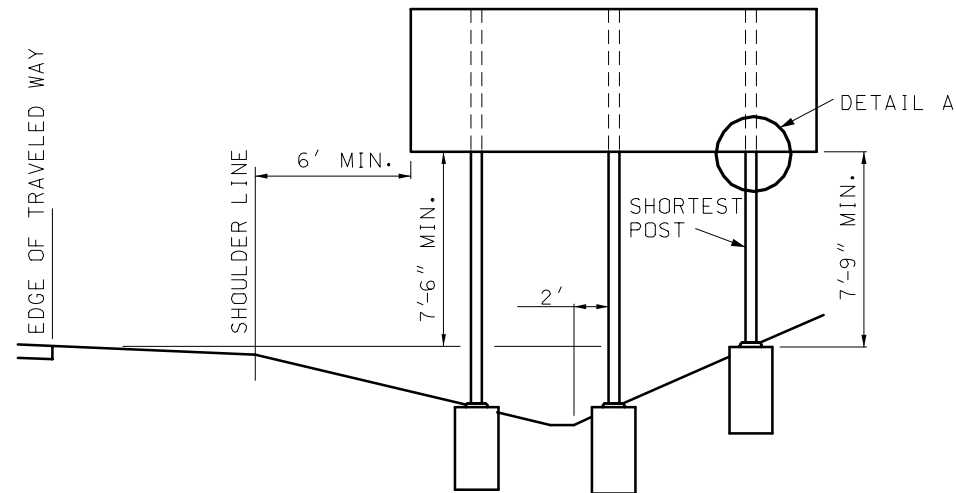


FRICTION CAP

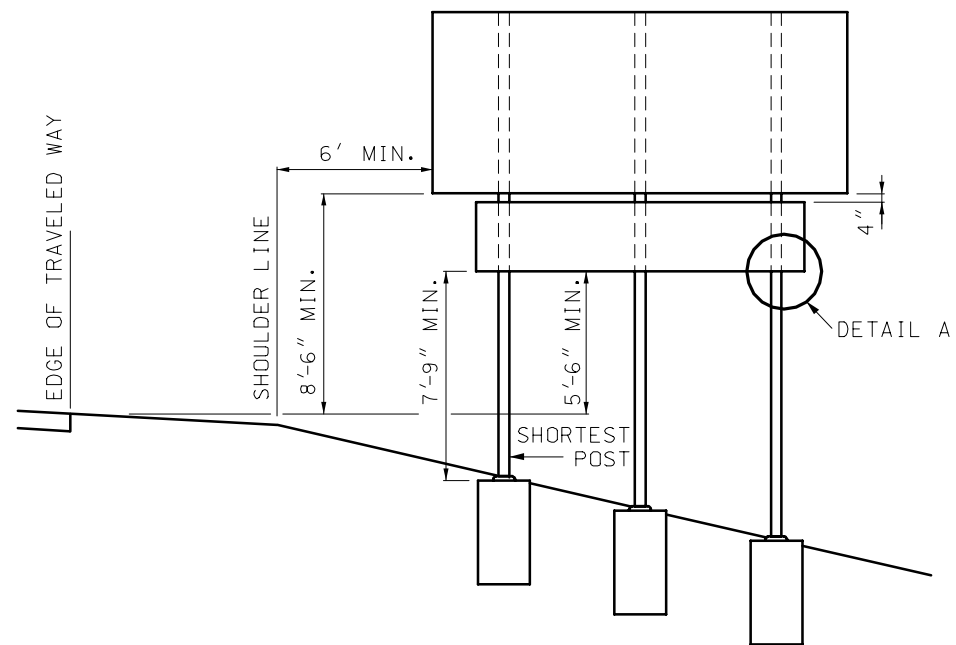
GENERAL NOTE:

REFER TO THE GENERAL NOTES ON SHEET 1.

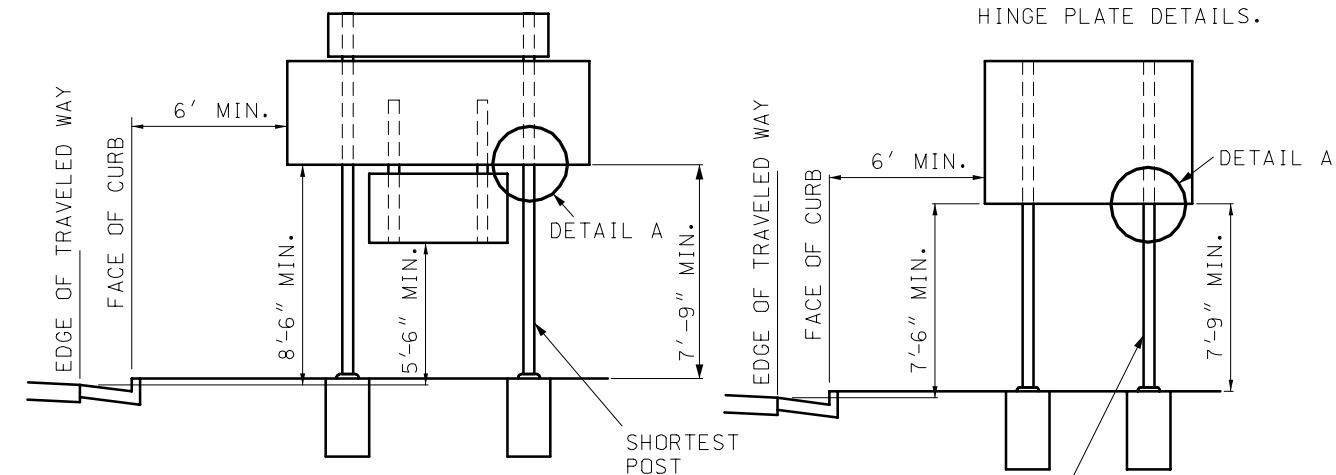
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION			
SIGN MOUNTING DETAILS POST FOR SIGNS 30 SQUARE FEET OR SMALLER			
DATE: _____	EFFECTIVE: 06-01-2006	903.03BC	4 11



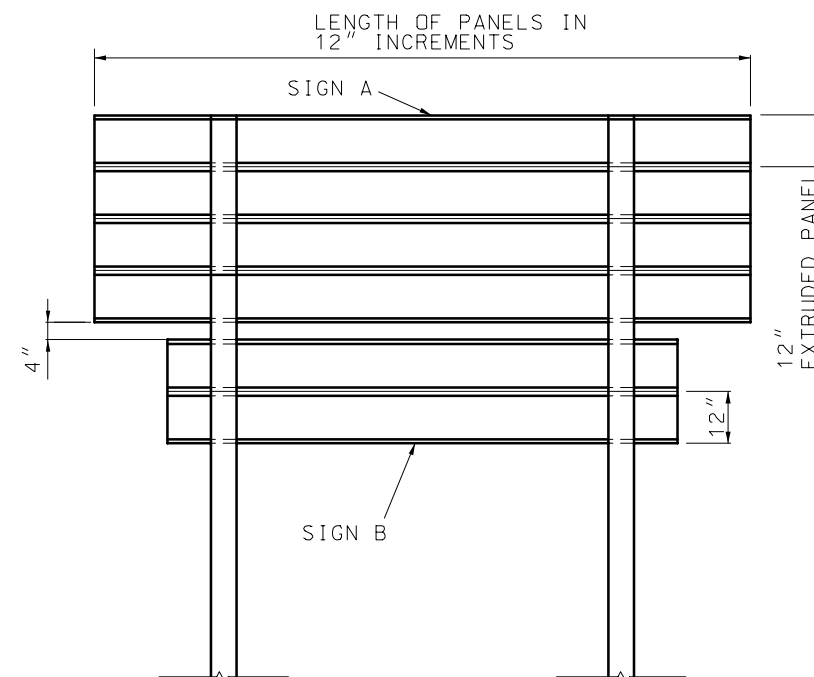
DITCH SECTION



FILL SECTION

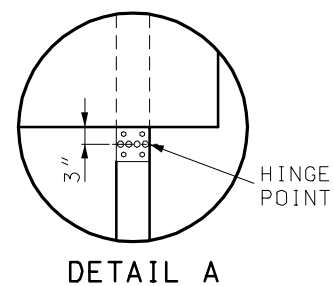


BARRIER CURB SECTIONS

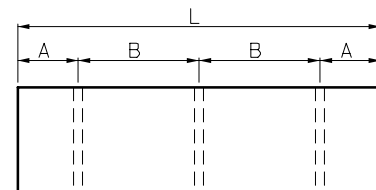
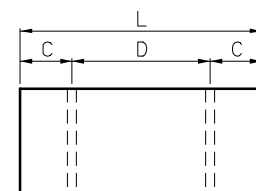


SIGN B MAY BE MOUNTED ABOVE OR BELOW SIGN A AS REQUIRED.

SIGN AND PANEL SPACING



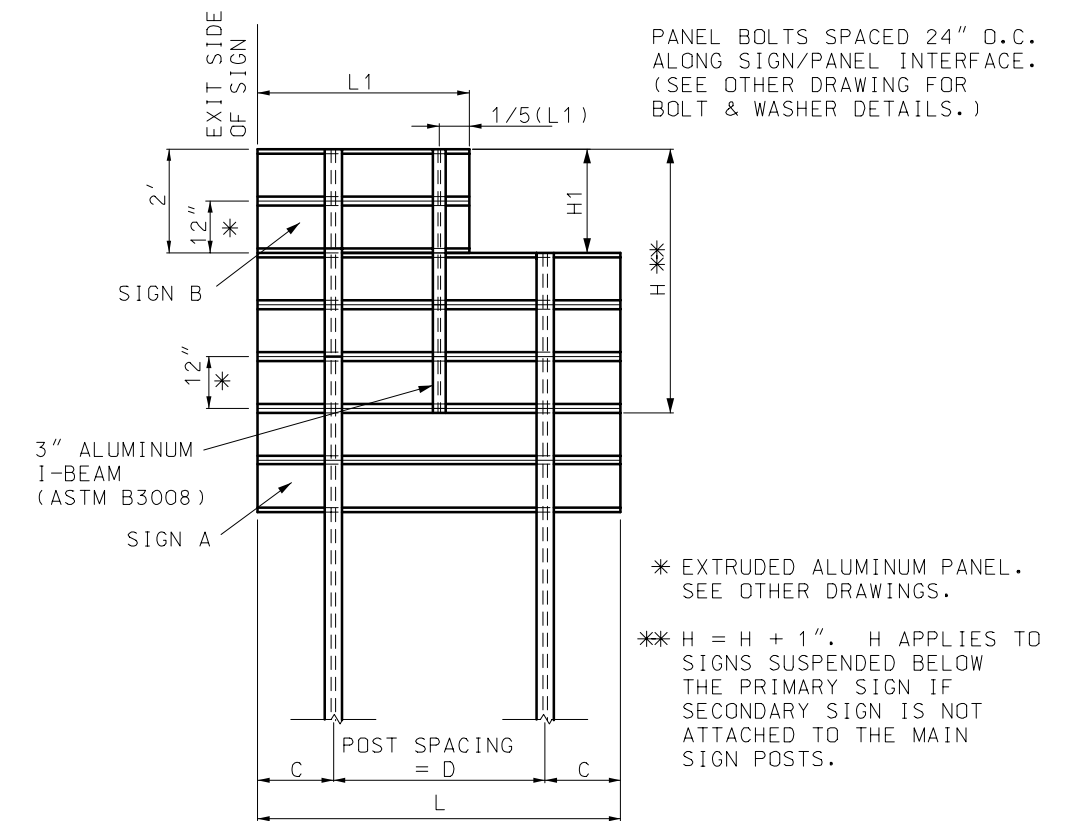
NOTE: SEE SHEET 2 FOR HINGE PLATE DETAILS.



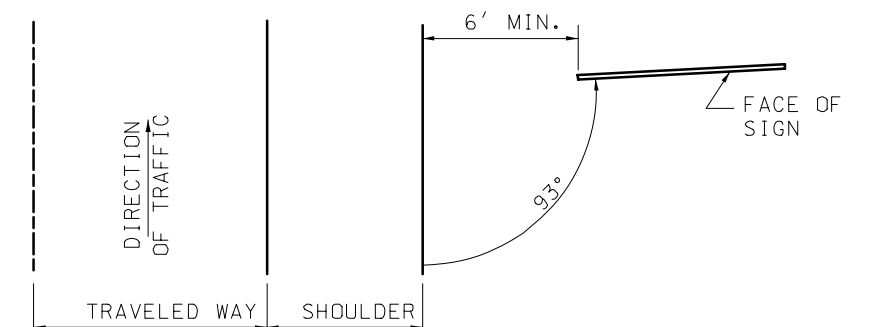
$$\begin{aligned} A &= 1/6(L) & C &= 1/5(L) \\ B &= 1/3(L) & D &= 3/5(L) \end{aligned}$$

POST SPACING

FOR L OF 6' TO 17' USE 2 POSTS.
FOR L GREATER THAN 17' USE 3 POSTS.
FOR L LESS THAN 17', 3 POSTS MAY BE USED DEPENDING ON SOIL CONDITIONS.



USE THIS DETAIL FOR EXIT NUMBER PANELS MOUNTED ON GUIDE SIGNS.

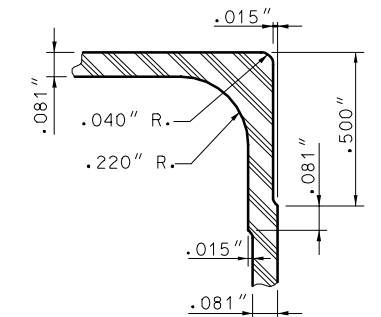
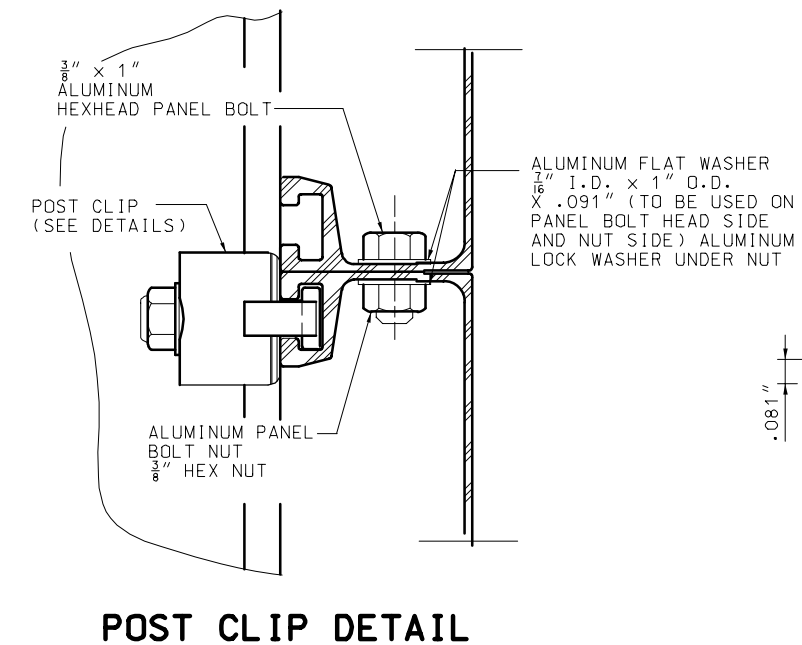
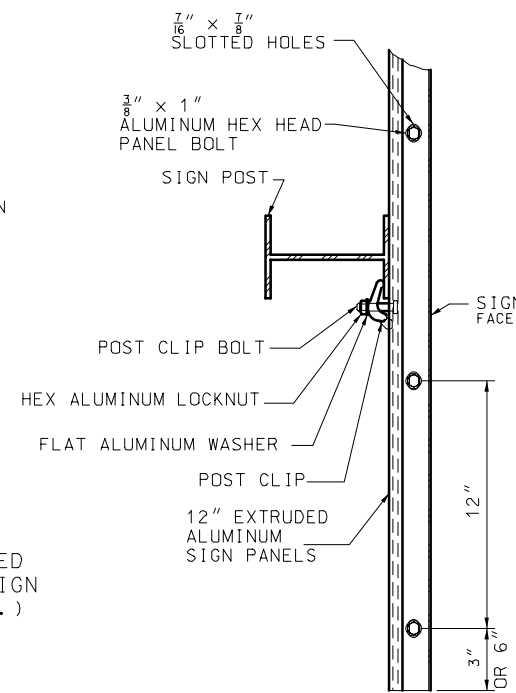
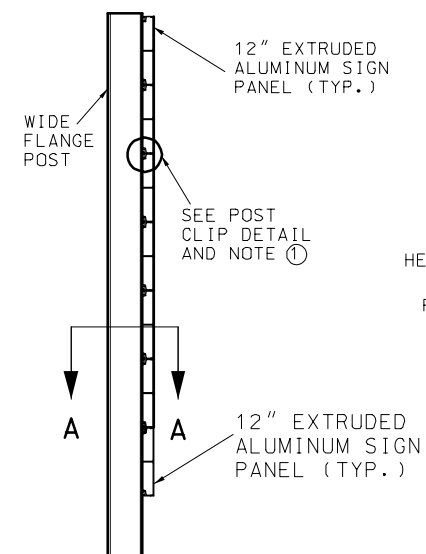
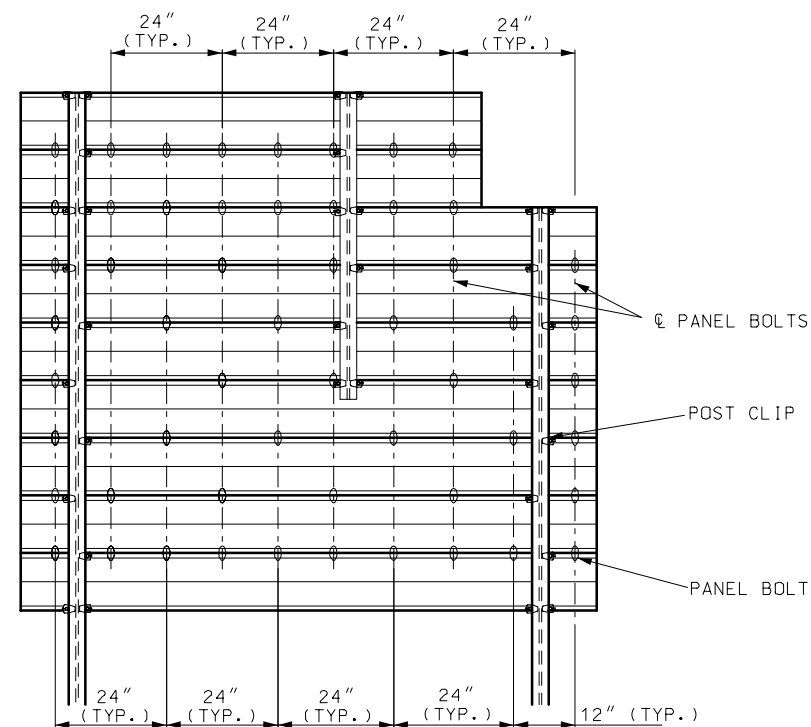


LOCATION SKETCH

GENERAL NOTE:

REFER TO GENERAL NOTES ON SHEET 1.

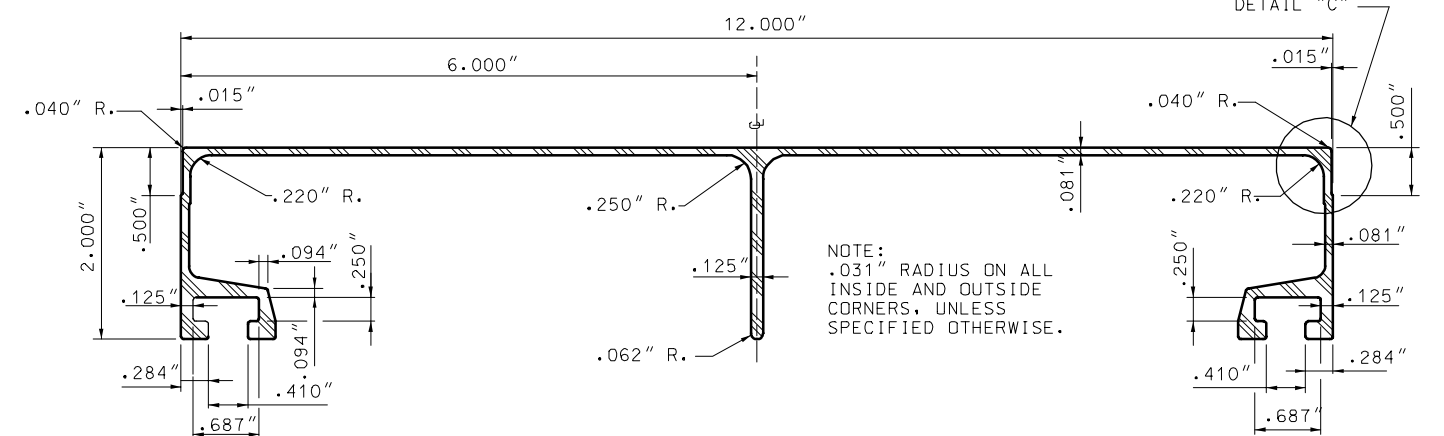
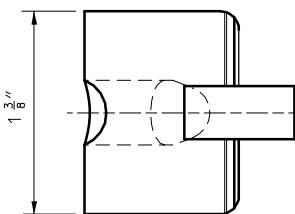
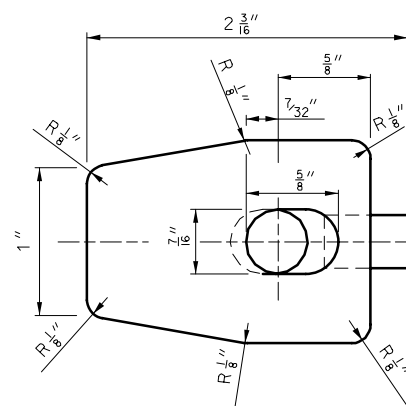
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION			
SIGN MOUNTING DETAILS TYPICAL SECTION AND POST SPACING			
DATE: _____	EFFECTIVE: 06-01-2006	903.03BC	5
			11



DETAIL "C"

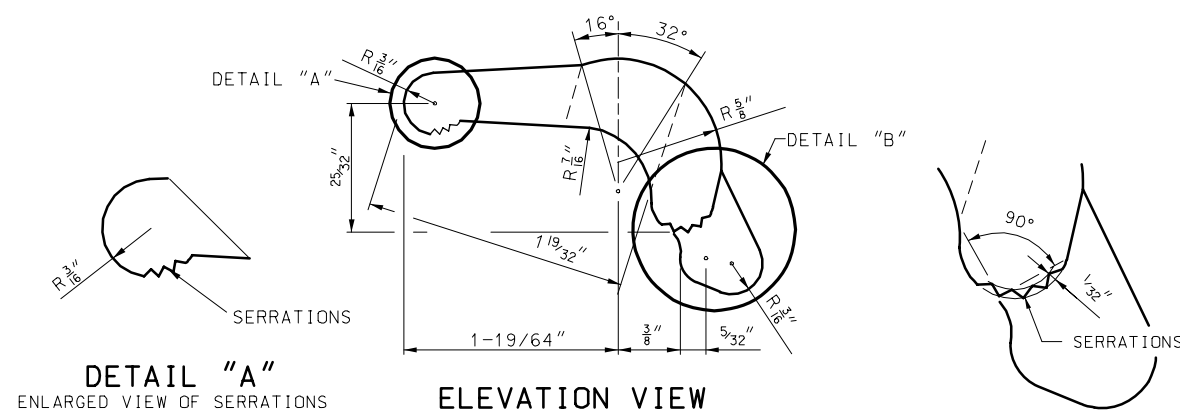
PANEL BOLT LOCATION

① SIGNS SHALL BE FIELD ATTACHED TO POSTS WITH POST CLIPS AND BOLTS, SEE POST CLIP DETAIL. THE SHANK OF THE POST CLIP BOLT SHALL FIT TIGHTLY AGAINST THE POST FLANGE AFTER THE LOCKNUTS ARE TORQUED. LOCKNUTS ON THE POST CLIP BOLTS SHALL BE TORQUED TO 225 INCH-POUNDS WHEN USING DRY, CLEAN, UNLUBRICATED THREADS.



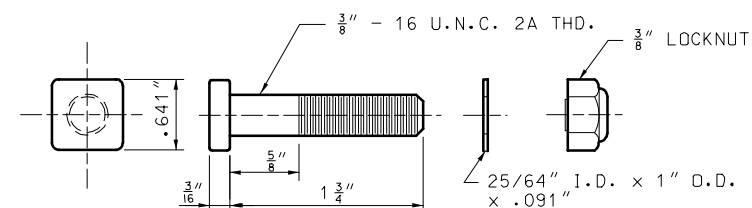
12" EXTRUDED ALUMINUM PANEL
MINIMUM WT. = 2.40 LBS./FT.

NOTE:
MINIMUM WEIGHT AND THICKNESS DIMENSIONS SHOWN.
HEAVIER PANELS MAY BE USED.



DETAIL "B"

ENLARGED DETAIL OF SERRATIONS
SAW GATING AS SHOWN
(APPROXIMATELY FLAT PERMISSABLE)

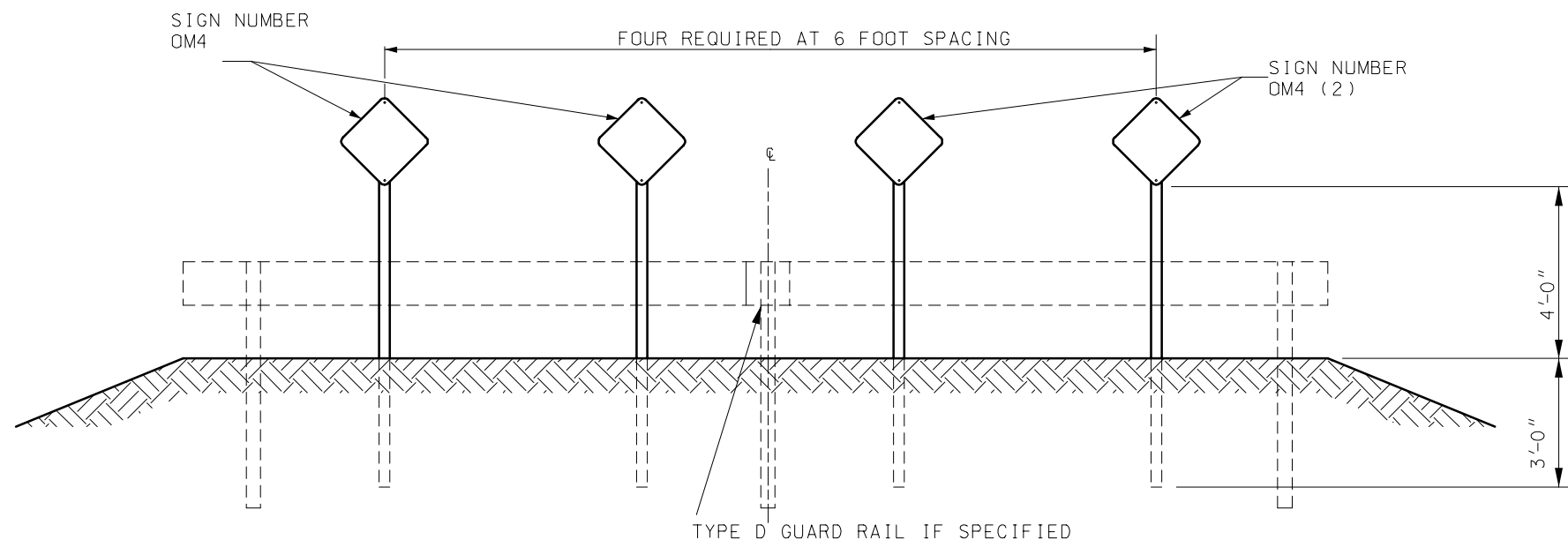


POST CLIP BOLT
WITH FLAT WASHER AND LOCKNUT

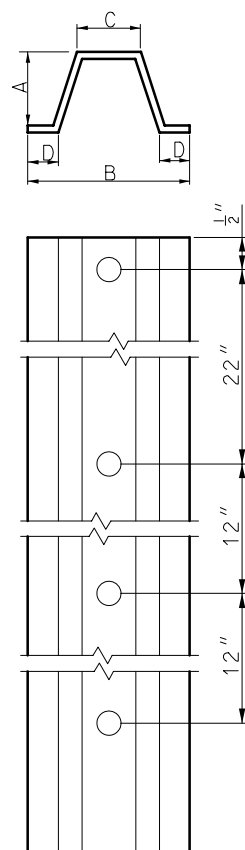
NOTE: SQUARE BOLT HEAD SHOWN.
RECTANGULAR BOLT HEAD WITH
LEAST DIMENSION OF .641" MAY
BE USED.

BOLT - $1 \frac{3}{4} \times \frac{3}{8}$ ALUMINUM
 HEX LOCKNUT - $\frac{3}{8}$ " ALUMINUM
 WASHER - ALUMINUM

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION			
	SIGN MOUNTING DETAILS EXTRUDED ALUMINUM PANEL DETAILS		
DATE: _____	EFFECTIVE: 06-01-2006	903.03BC	<div>6</div> <div>11</div>



MOUNTING DETAILS
(END OF ROAD OR STREET)
TYPE 4 OBJECT MARKER
SIGN OM4
(2) RED MODOT TYPE 7 REFLECTIVE SHEETING ON
0.080 SHEET ALUMINUM.



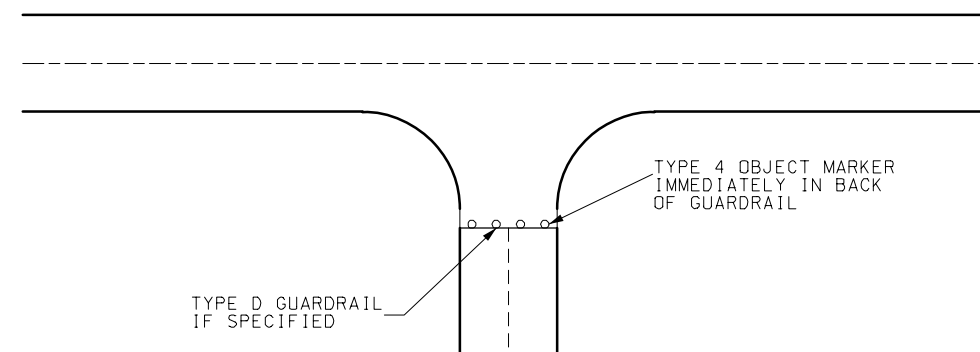
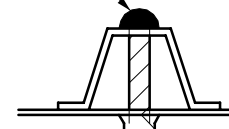
HOLE PUNCHING SHOWN IS THE MINIMUM NUMBER AND SPACING ALLOWED. THE MAXIMUM HOLE PUNCHING ALLOWED IS $\frac{3}{8}$ " INCH DIAMETER HOLES, ONE INCH CENTER TO CENTER, BEGINNING ONE INCH FROM THE END AND CONTINUING THE ENTIRE LENGTH OF THE POST.

STEEL OBJECT MARKER POST					
LIMITS	LBS/FT (3)	DIMENSIONS - INCHES			
		A	B	C	D
MIN.	1.80	$1\frac{1}{4}$	$2\frac{1}{2}$	$3\frac{1}{32}$	$15\frac{1}{32}$
MAX.	2.25	$1\frac{5}{8}$	$3\frac{1}{4}$	$1\frac{1}{4}$	$23\frac{1}{32}$

(3) WEIGHT BEFORE GALVANIZING OR PUNCHING. LIMITS SHOWN ARE ABSOLUTE. NO FURTHER WEIGHT, DIMENSIONAL OR COMMERCIAL TOLERANCE WILL BE ACCEPTABLE.

OBJECT MARKER POST AND FASTENER DETAILS

FOUL THREADS OF BOLT AS APPROVED BY THE ENGINEER.

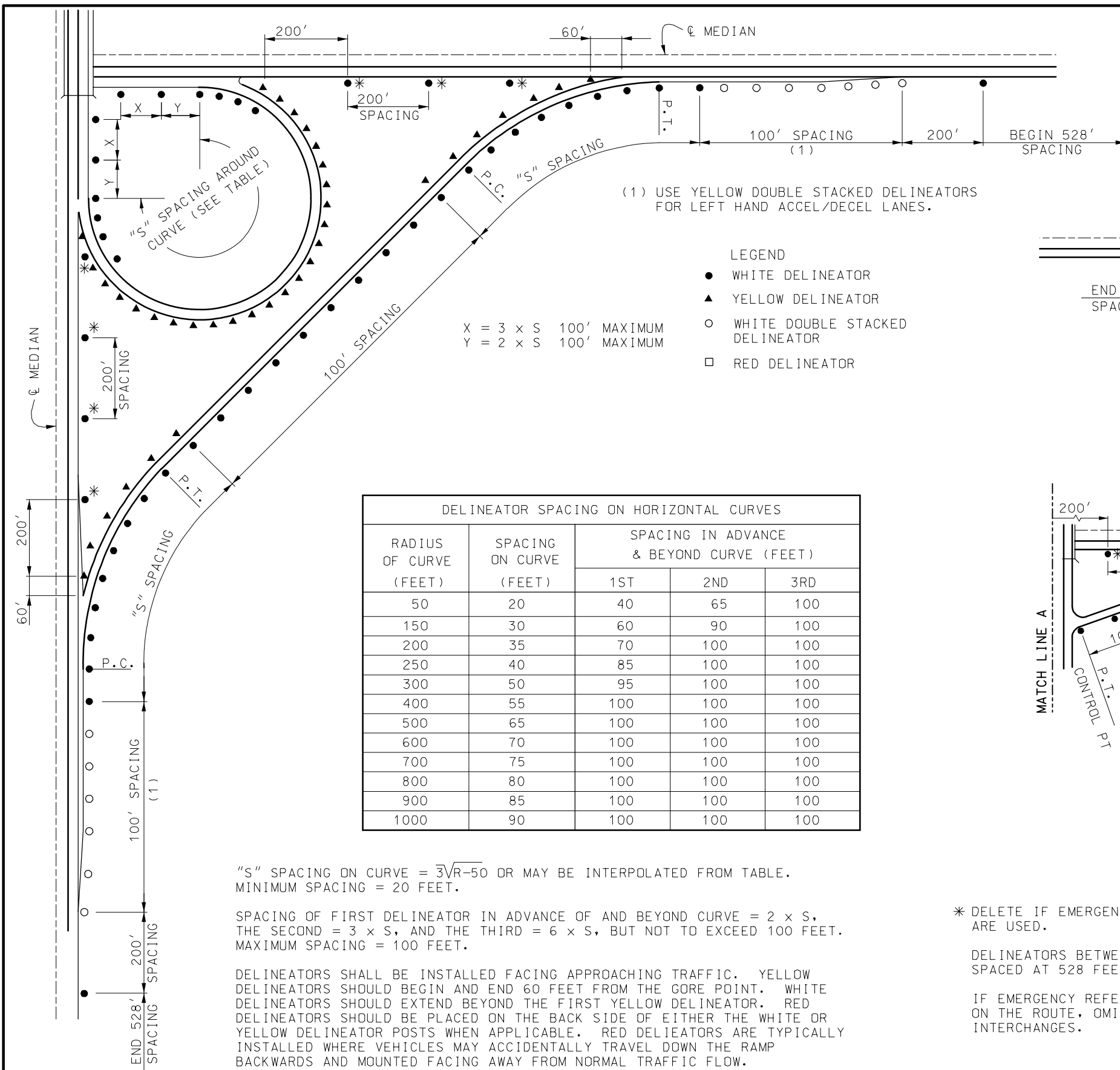


TYPICAL ROAD CLOSED

GENERAL NOTES:

THE CONTRACT UNIT PRICE FOR EACH MILE MARKER AND TYPE 4 OBJECT MARKER SHALL INCLUDE SIGN PANEL, REFLECTIVE SHEETING, AND POST, REGARDLESS OF LENGTH.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION			
		SIGN MOUNTING DETAILS DELINEATORS, MILE MARKERS AND OBJECT MARKERS	
DATE: _____	EFFECTIVE: 06-01-2006	903.03BC	7 11



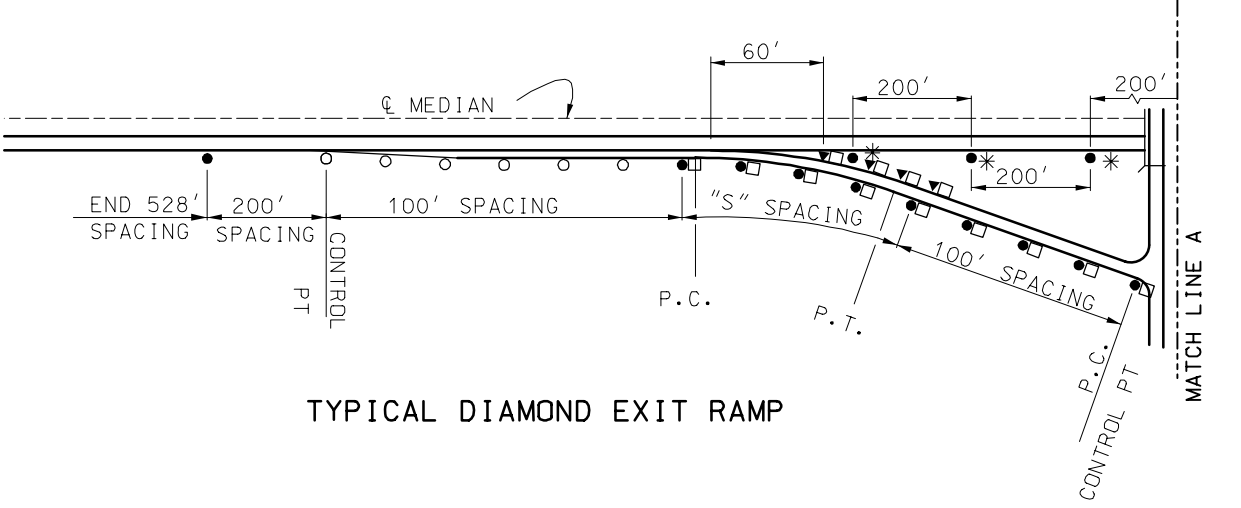
DELINEATOR SPACING ON HORIZONTAL CURVES				
RADIUS OF CURVE (FEET)	SPACING ON CURVE (FEET)	SPACING IN ADVANCE & BEYOND CURVE (FEET)		
		1ST	2ND	3RD
50	20	40	65	100
150	30	60	90	100
200	35	70	100	100
250	40	85	100	100
300	50	95	100	100
400	55	100	100	100
500	65	100	100	100
600	70	100	100	100
700	75	100	100	100
800	80	100	100	100
900	85	100	100	100
1000	90	100	100	100

"S" SPACING ON CURVE = $\sqrt[3]{VR-50}$ OR MAY BE INTERPOLATED FROM TABLE.
 MINIMUM SPACING = 20 FEET.

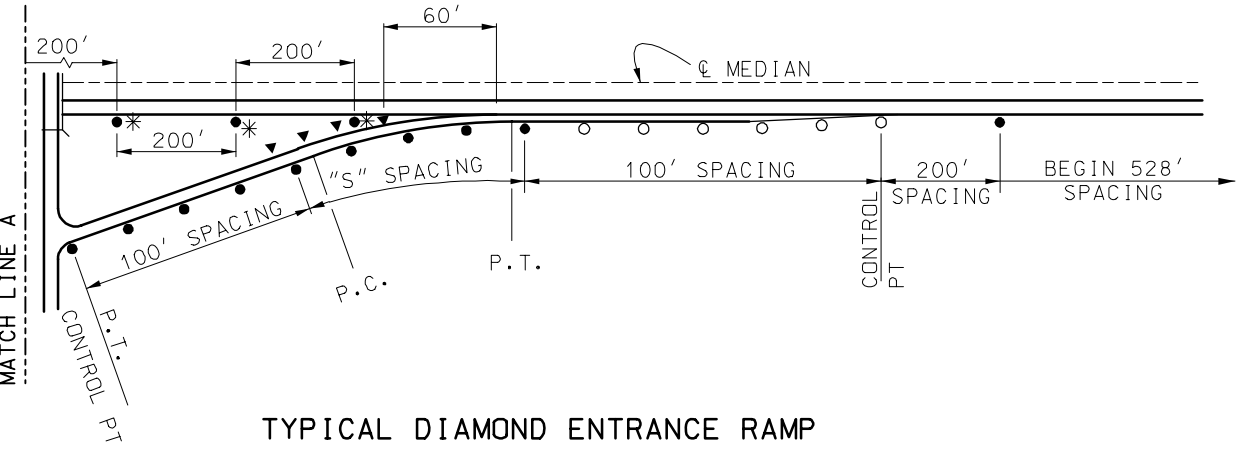
SPACING OF FIRST DELINEATOR IN ADVANCE OF AND BEYOND CURVE = $2 \times S$, THE SECOND = $3 \times S$, AND THE THIRD = $6 \times S$, BUT NOT TO EXCEED 100 FEET.
 MAXIMUM SPACING = 100 FEET.

DELINEATORS SHALL BE INSTALLED FACING APPROACHING TRAFFIC. YELLOW DELINEATORS SHOULD BEGIN AND END 60 FEET FROM THE GORE POINT. WHITE DELINEATORS SHOULD EXTEND BEYOND THE FIRST YELLOW DELINEATOR. RED DELINEATORS SHOULD BE PLACED ON THE BACK SIDE OF EITHER THE WHITE OR YELLOW DELINEATOR POSTS WHEN APPLICABLE. RED DELIEATORS ARE TYPICALLY INSTALLED WHERE VEHICLES MAY ACCIDENTALLY TRAVEL DOWN THE RAMP BACKWARDS AND MOUNTED FACING AWAY FROM NORMAL TRAFFIC FLOW.

CHANNEL POST DELINEATORS SHALL BE OMITTED ON SECTIONS WHERE GUARDRAIL IS PRESENT. THESE PORTIONS SHALL BE DELINEATED UTILIZING THE GUARDRAIL DELINEATORS. IN AREAS WHERE RED DELINEATORS ARE INDICATED. RED RETRO-REFLECTIVE SHEETING WILL BE PLACED ON THE BACK SIDE OF THE GUARDRAIL DELINEATOR.



TYPICAL DIAMOND EXIT RAMP



TYPICAL DIAMOND ENTRANCE RAMP

TYPICAL INTERCHANGE

* DELETE IF EMERGENCY REFERENCE MARKERS ARE USED.

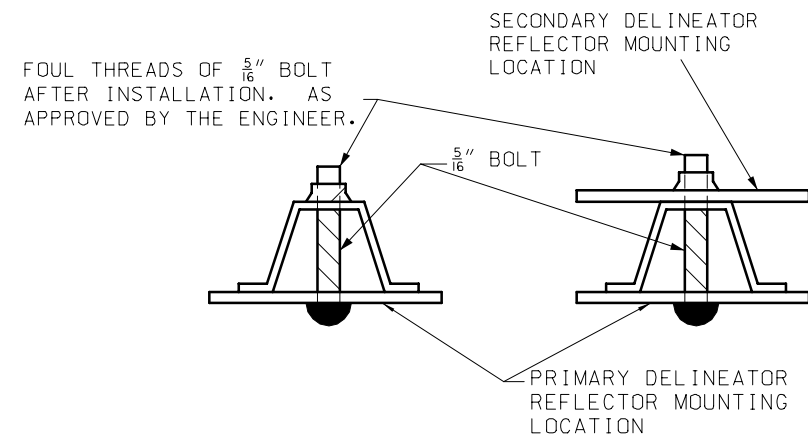
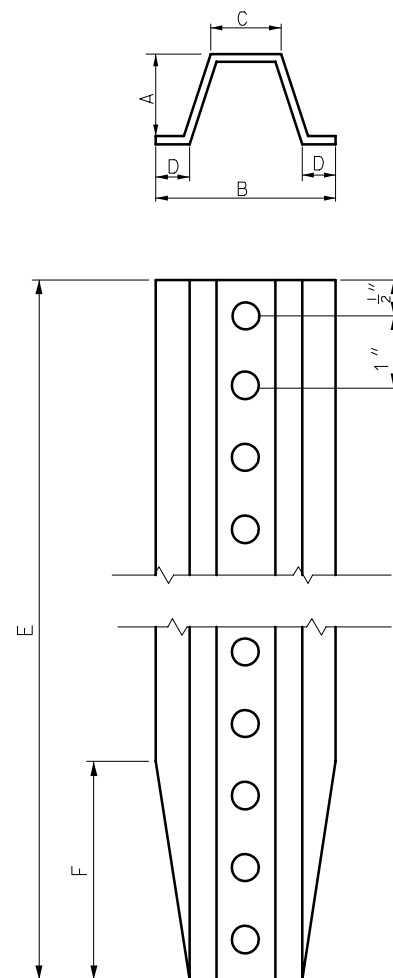
DELINEATORS BETWEEN INTERCHANGES SPACED AT 528 FEET.

IF EMERGENCY REFERENCE MARKERS ARE USED ON THE ROUTE, OMIT DELINEATORS BETWEEN INTERCHANGES.

GENERAL NOTES:

THE CONTRACT UNIT PRICE FOR EACH CHANNEL POST DELINEATOR SHALL INCLUDE THE REFLECTOR, FASTENERS AND POST.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION			
SIGN MOUNTING DETAILS CHANNEL POST DELINEATORS			
DATE: _____	EFFECTIVE: 06-01-2006	903.03BC	8 11

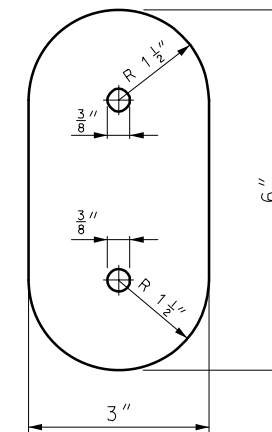
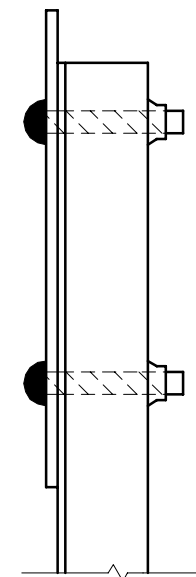


HOLE PUNCHING TO EQUAL $\frac{3}{8}$ " DIAMETER HOLES, ONE INCH CENTER TO CENTER, BEGINNING ONE-HALF INCH FROM THE END AND CONTINUING THE ENTIRE LENGTH OF THE POST.

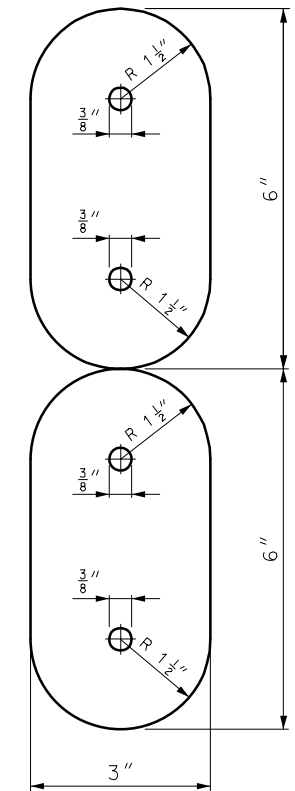
DELINEATOR POST							
LIMITS	LBS/FT (2)	DIMENSIONS - INCHES					
		A	B	C	D	E	F
NOMINAL	1.12	1	$2\frac{1}{4}$	$\frac{7}{8}$	$\frac{3}{8}$	84	1
TOLERANCE	$\pm 5\%$	$\pm \frac{1}{8}$	$\pm \frac{1}{8}$	$\pm \frac{1}{8}$	$\pm \frac{1}{8}$	± 1	$\pm \frac{1}{4}$

(2) WEIGHT BEFORE GALVANIZING OR PUNCHING.

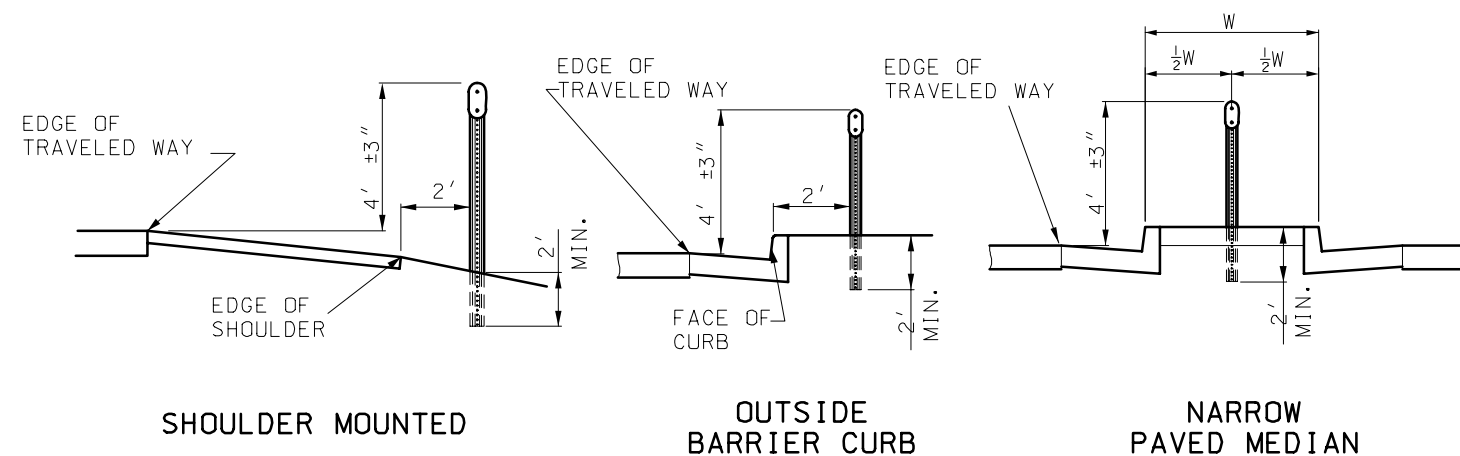
DELINEATOR POST AND FASTENER DETAILS



CHANNEL POST DELINEATOR REFLECTOR

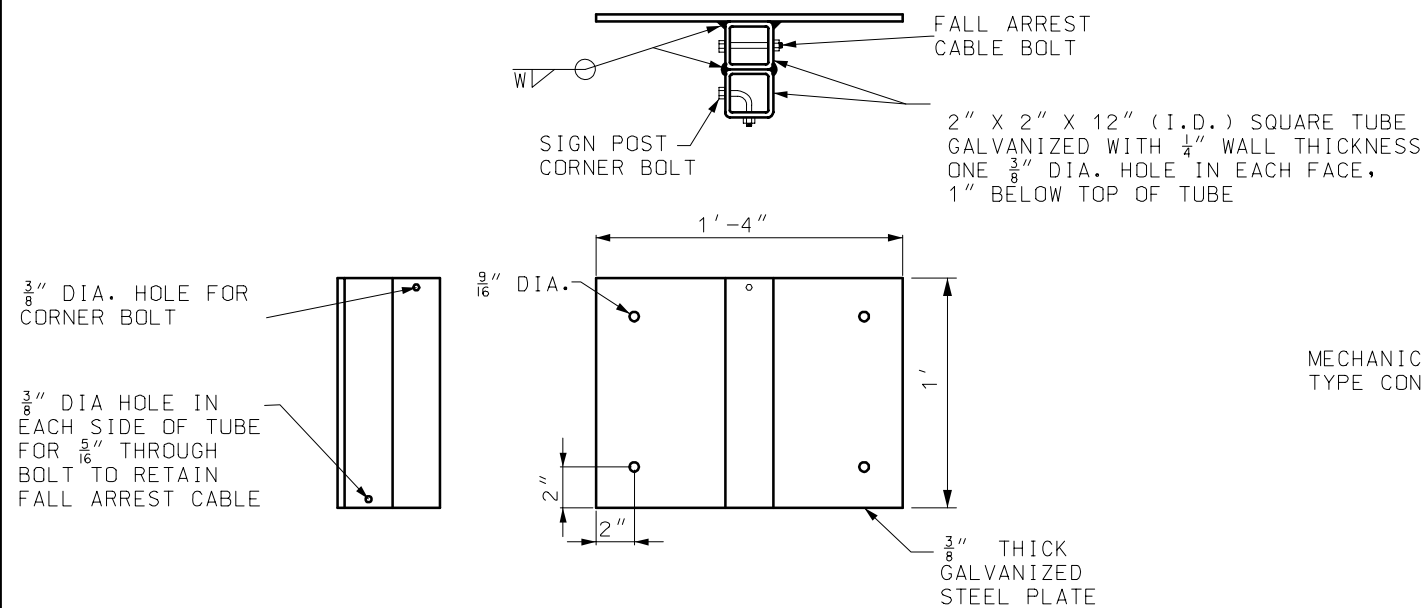


DOUBLE STACKED CHANNEL POST DELINEATOR REFLECTOR

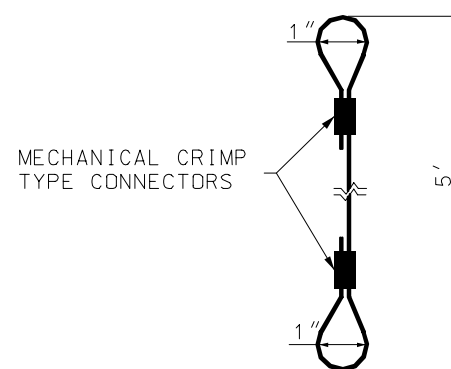


DELINEATOR MOUNTING DETAILS

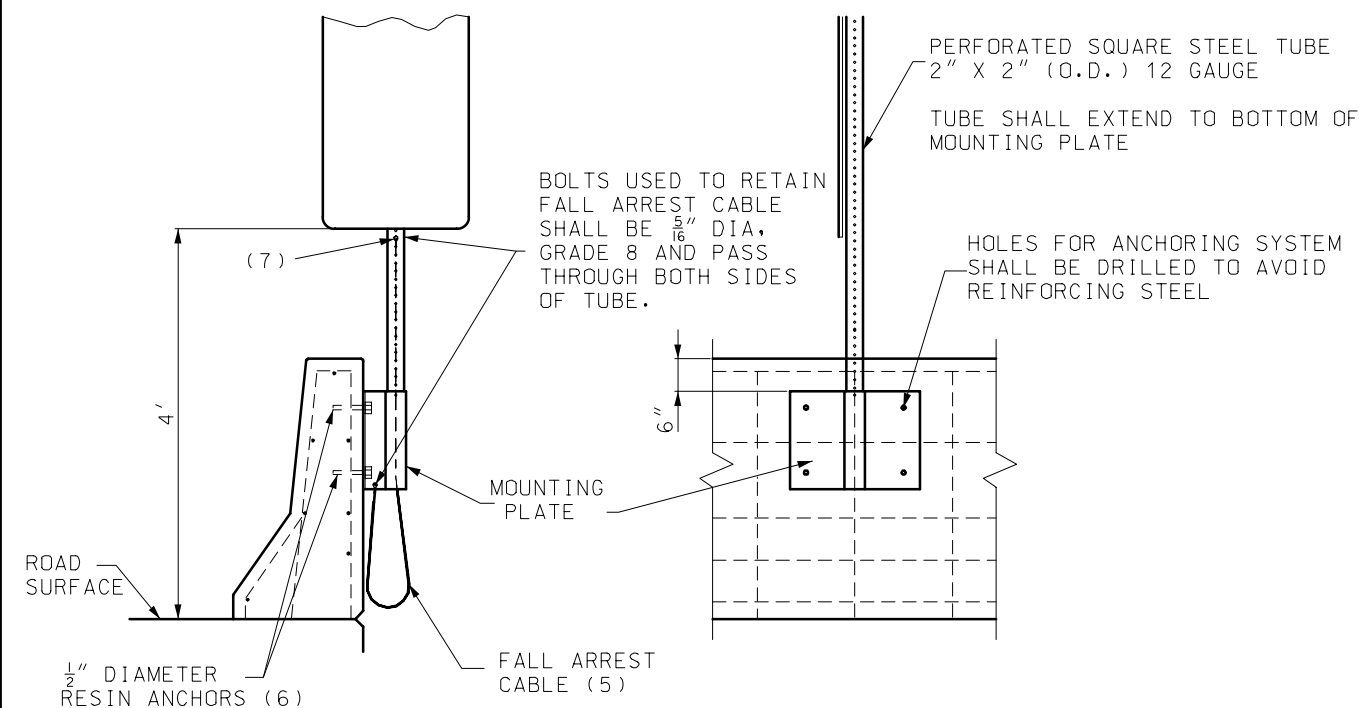
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION			
SIGN MOUNTING DETAILS CHANNEL POST DELINEATORS			
DATE: _____	EFFECTIVE: 06-01-2006	903.03BC	9 11



MOUNTING PLATE DETAIL

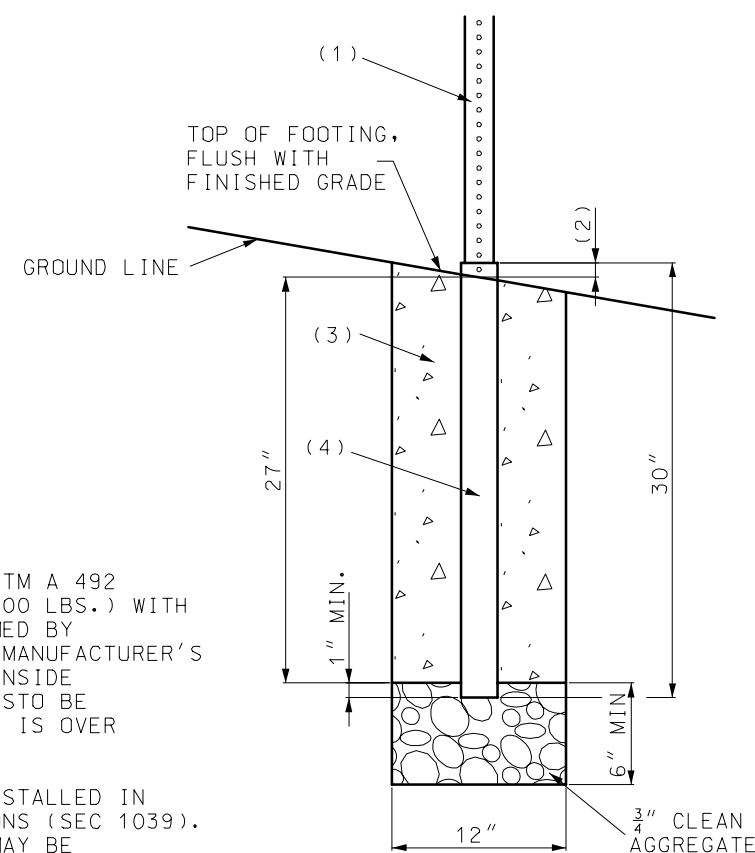


FALL ARREST CABLE DETAIL

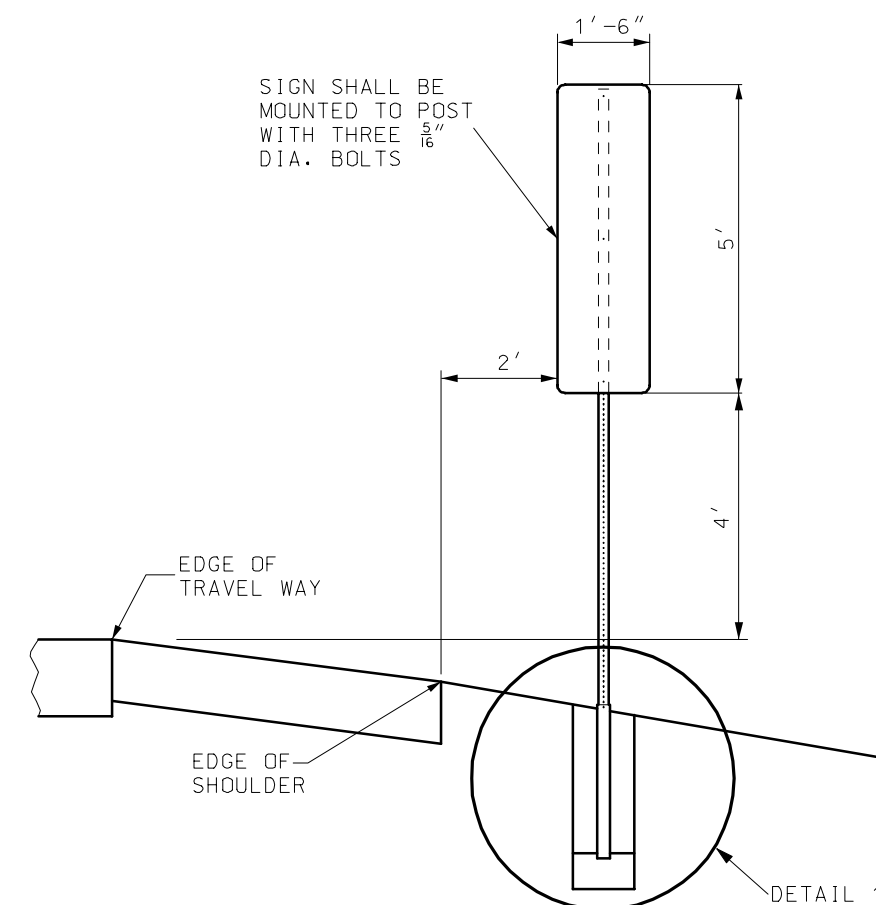


BARRIER WALL INSTALLATION

- (1) PERFORATED SQUARE STEEL TUBE 2" X 2" (O.D.) 12 GAUGE. TUBE SHALL EXTEND A MINIMUM OF 24" BELOW THE TOP OF THE FOUNDATION TUBE.
- (2) TUBE TO EXTEND ABOVE FOUNDATION ONLY ENOUGH TO ALLOW BOLT TO BE INSERTED 2" MAXIMUM.
- (3) CONCRETE MIX TO HOLD FOUNDATION TUBE PLUMB WITHOUT BRACING SHALL HAVE A MINIMUM OF 5.5 SACKS OF CEMENT PER CUBIC YARD AND A MAXIMUM SLUMP OF 2 $\frac{1}{2}$ ".
- (4) 2 $\frac{1}{2}$ " x 2 $\frac{1}{2}$ " x 30" (O.D.) SQUARE TUBE GALVANIZED 7 GAGE ($\frac{3}{16}$ ") WITH ONE $\frac{3}{8}$ " DIA. HOLE IN EACH FACE, 1" BELOW TOP OF TUBE.
- (5) $\frac{1}{8}$ " x 5' LONG STAINLESS STEEL CABLE (ASTM A 492 TYPE 304 MINIMUM BREAKING STRENGTH 200 LBS.) WITH A 1" DIA. LOOP AT EACH END LOOPS FORMED BY MECHANICAL CRIMP TYPE CONNECTION PER MANUFACTURER'S SPECIFICATIONS. CABLE IS TO BE RUN INSIDE PERFORATED SQUARE STEEL TUBE. CABLE IS TO BE USED ONLY WHEN SIGN MOUNTING LOCATION IS OVER ANOTHER TRAVELWAY.
- (6) $\frac{1}{2}$ " DIAMETER RESIN ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD SPECIFICATIONS (SEC 1039). AN APPROVED MECHANICAL TYPE ANCHOR MAY BE USED IF THE DEVICE EQUALS OR EXCEEDS THE PULL TEST REQUIREMENTS OF SEC. 1039.
- (7) FALL ARREST CABLE TO BE SECURED TO NEXT FULL HOLE BELOW SIGN



DETAIL 1



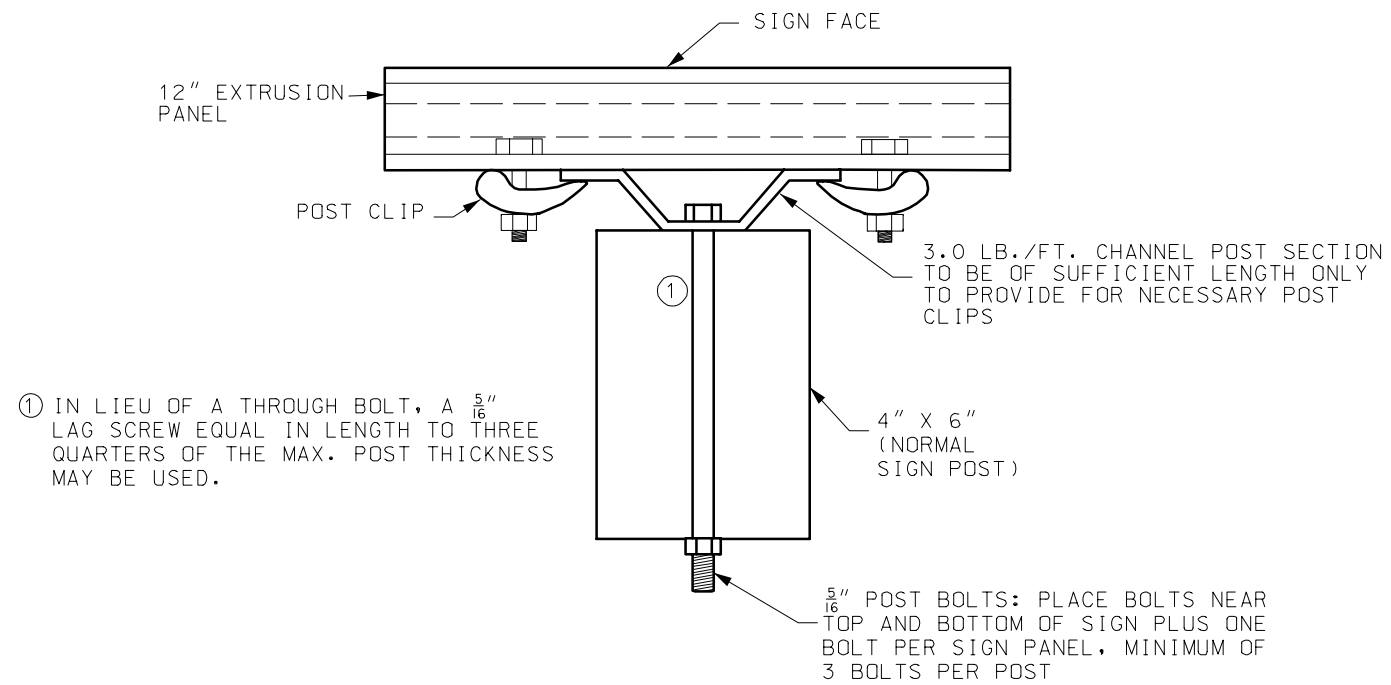
GROUND INSTALLATION

GENERAL NOTES:

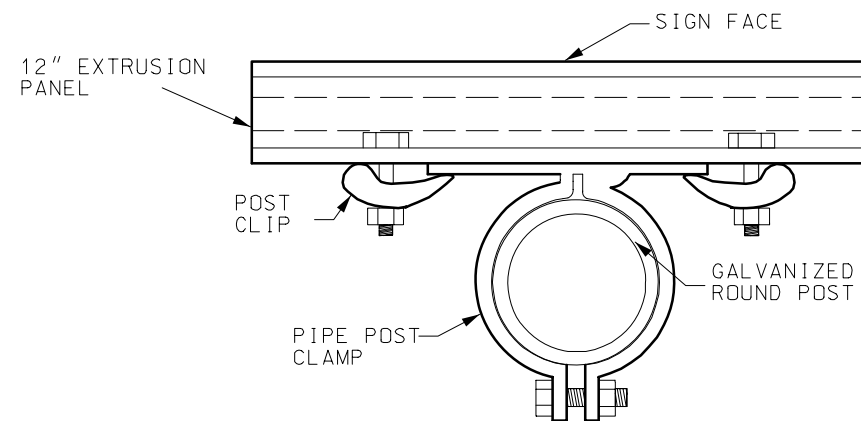
PERFORATED SQUARE STEEL TUBE SHALL BE SECURED TO FOUNDATION TUBE OR BARRIER WALL MOUNTING PLATE WITH A CORNER BOLT PER PERFORATED SQUARE STEEL TUBE MANUFACTURER'S SPECIFICATION.

THE CONTRACT UNIT PRICE FOR REFERENCE MARKER SHALL INCLUDE SIGN PANEL, FASTENER, POST AND ALL MATERIAL CONTAINED IN THE FOUNDATION OR BARRIER WALL MOUNTING HARDWARE.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION			
		SIGN MOUNTING DETAILS EMERGENCY REFERENCE MARKERS	
DATE: _____	EFFECTIVE: 06-01-2006	903.03BC	10 11

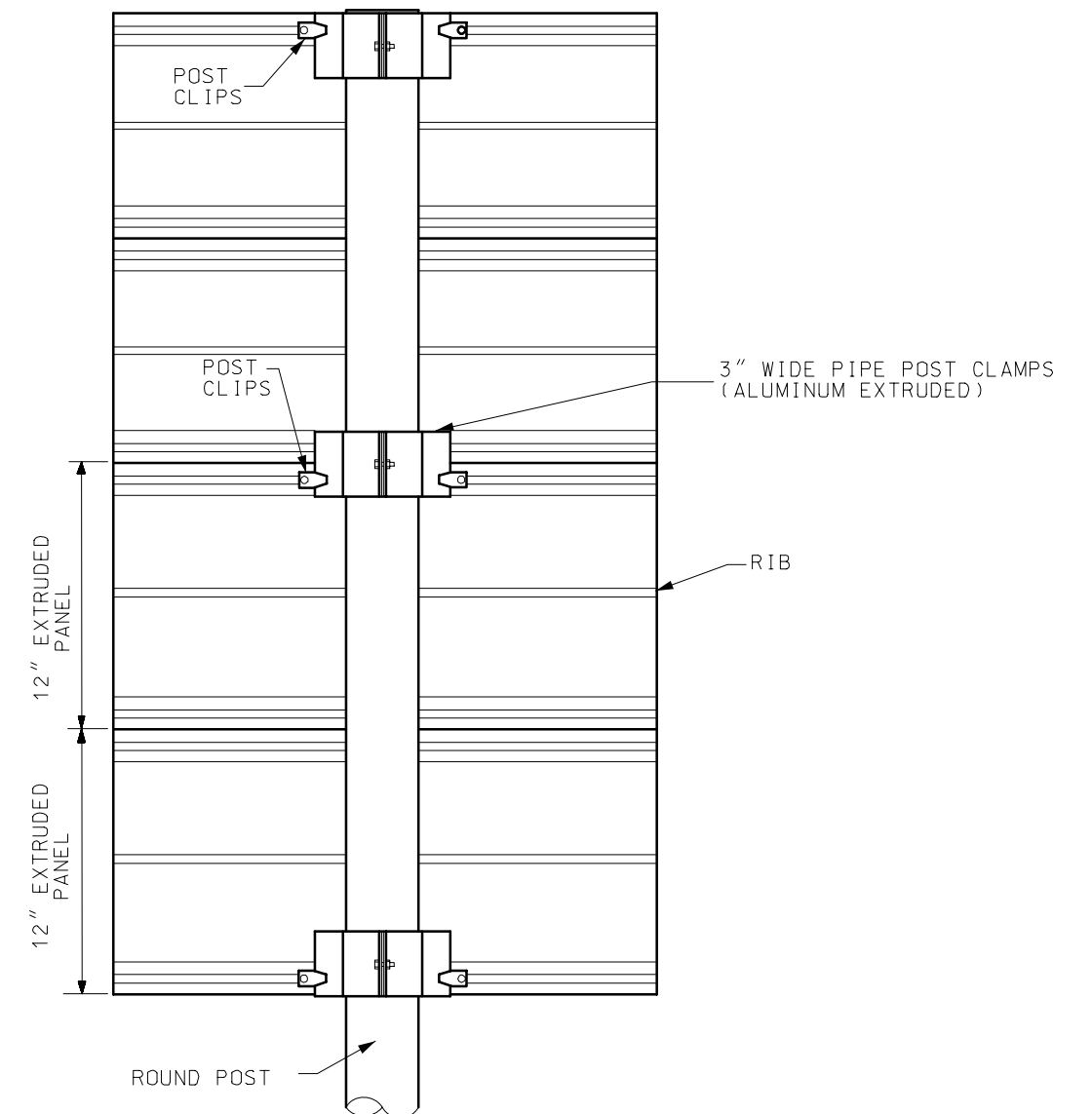
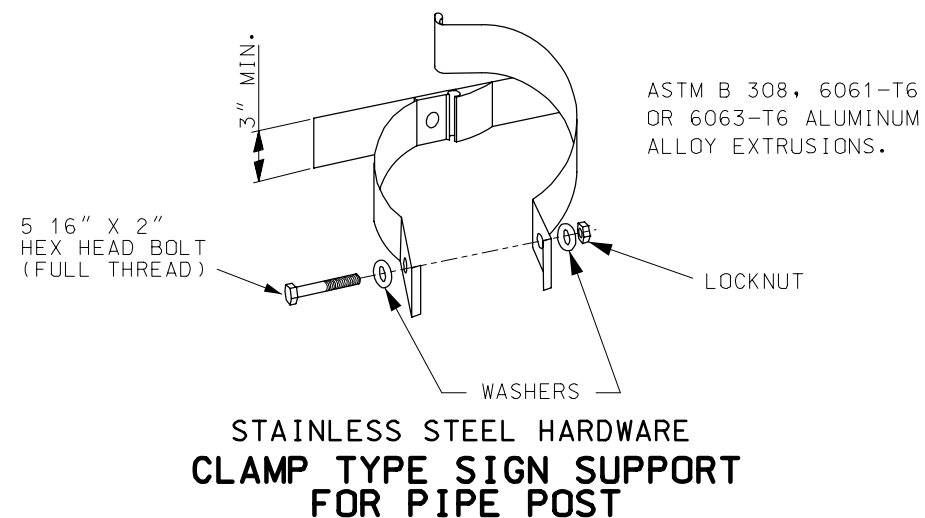


PLAN VIEW
MOUNTING DETAILS FOR EXTRUDED
PANELS ON WOOD 4" X 6" POST



PLAN VIEW
MOUNTING DETAILS FOR EXTRUDED PANELS
ON ROUND PIPE POST

NUMBER OF BOLTS TO ATTACH STEEL CHANNEL TO WOOD POST	
SIGN HEIGHT	NO. OF BOLTS* PER WOOD POST USED
1'	2
2'	3
3'	4
4'	5
5'	6
6'	7
7'	8
*LAG SCREWS MAY BE SUBSTITUTED	



TYPICAL POST CLIP MOUNTING DETAILS
FOR ROUND PIPE POSTS

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION			
		SIGN MOUNTING DETAILS EXTRUDED PANEL ATTACHMENTS FOR SIGNS 30 SQ. FT. OR SMALLER	
DATE: _____	EFFECTIVE: 06-01-2006	903.03BC	11/11